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Center for Human Resource Research

The Ohio State University

PATHWAYS TO THE FUTURE, Vol. IV

A Report on the
National Longitudinal Surveys of Youth
Labor Market Experience in 1982

Revised: April 1984

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A Report on the National Longitudinal Surveys of Youth Labor Market Experience in 1982

by

Paula Baker

Susan Carpenter

Joan E. Crowley

Ronald D'Amico

Choongsoo Kim

William Morgan

and

John Wielgosz

Center for Human Resource Research

The Ohio State University

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EXECUTIVE SUMMARY

PATHWAYS TO THE FUTURE, VOLUME IV

This is the fourth report on a nationally representative sample of the 32.9 million young people who were age 14-21 on January 1, 1979. This same sample will be interviewed yearly through 1984 as part of the National Longitudinal Surveys.

Chapter One, "The Nature and Consequences of High School Employment," finds that about one-third of high school students in the tenth grade were employed for at least one week, with white males showing the highest percentage. At the tenth grade level, minority students who are employed earn more than their white counterparts. Males in all grades earn more, work more hours, and have a higher likelihood of employment than females of the same age. Sex differences are much greater among minorities than among whites, however. By grade twelve, whites earn about five percent more than minorities and they work more hours per week and weeks per year. Three-quarters of all employed students had only one employer in a given year, with white males being most likely to have had more than one. One-third of all employed high school students were employed in a service occupation, far more than in any other type of occupation. Whites are much more likely to accumulate work experience over the course of their high school career than are minorities.

The effects of employment on schooling appear to be positive. Only for a high level of work intensity did employment rob students of study time, and this decrease did not appear to affect the students' academic performance. Employment actually seems to be positively related to the probability of high school graduation. Also, high school employment is significantly associated with less unemployment after high school. This connection may be due in part to an increased awareness of job opportunities as a result of high school employment. A significant number of students find employment after graduation in the same field, and even with the same employer as during school. Finally, work during high school is associated with higher paying and more prestigious jobs.

Chapter Two, "A Longitudinal Study of Reservation Wages, Duration of Job Search, and Subsequent Wages," expands on previous studies which focus on whether or not the length of the job search period among young people leads to positive returns in terms of subsequent wage gains. NLS data show that about 90 percent of males and nearly 80 percent of females who were unemployed in 1979 eventually found a job before the 1981 interview date. Males, on average, found jobs about 6 months after the interview date, and females found jobs after about 7 months. Individual characteristics among males between those who found a job and those who did not could not be readily differentiated, but among females, those who found a job, in contrast to those who did not, were more likely to have attained more years of schooling, to be more knowledgeable about the labor market, and to live in the South. Black females tended less than other females to be able to find jobs. Overall, unemployed young people, in contrast to their employed counterparts, tended to be less educated. Being a black or a veteran also increased the probability of being unemployed.

Among both males and females who did find jobs, the mean value of the subsequent wage was about 20 percent higher than that of the reservation wage as of the 1979 interview week. One surprising finding is that as their search period lengthens, unemployed youths increased their asking wages. For males, resulting wages were higher if they searched longer, and vice versa. Search activities thus yielded positive returns and could be regarded as an investment. For females, however, an inverse relationship was found between the length of job search and the resulting wage. (Supporting evidence for this negative relationship has been presented in many previous empirical studies.)

Chapter Three, "The Effectiveness of Job Search and Job Finding Methods of Young Americans," examines whether particular methods of job search exert a significant influence on the duration of job search and the level of job satisfaction of young Americans. It is well established that informal methods are very important in the job search process, but the reasons for this preference, however, are not at all clear. Previous studies of the effectiveness of job search methods have tended to use rather narrow definitions of effectiveness and have not adequately controlled for the variety of personal and labor market characteristics. The NLS data make it possible for this study to overcome many of these problems. Search methods do significantly influence the duration of job search, and informal methods perform significantly better than the state employment service. However, no evidence is found to support the often espoused view that informal methods convey a particular type of intensive and qualitative information which makes for greater job satisfaction.

Chapter Four, "Race, Employment and Educational Attainment," shows that young people's desire for education is strong, and data indicate that their expectations are closely predictive of actual attainment. A study of three groups defined by their 1979 educational status--youths who were enrolled in 11th or 12th grade, youth who were out of school, and youth who were in college--showed that in-school youth who expected degrees maintained that expectation, and among out-of-school youth, dropouts were most likely to increase their educational level. The group least likely to obtain additional education were the high school graduates. Among 1979 high school students, the model expectation is for a bachelor's degree, and the next largest category is high school graduation. Women are more likely than men to aspire to some college, especially white and Hispanic women. Hispanics are least likely to meet their educational goals, and whites, particularly white males, are most successful. Black females are less likely to have left school without completing their expected education than are black males. Most of the high school sample who were out of school by 1982 reported that they had left school because they had completed their degrees.

Among the 1979 college students, whites tended to be somewhat ahead of minorities in college, and the mean attainment for all sex-race groups fell around thirteen years. Black females had the lowest average attainment. In general, men in college tend more than women to expect to go on to graduate school, white women tend more often than men to expect to complete less than four years of college. Black and Hispanic men and black women have the highest rate of failure (to attain their expected level of education), while white males are less likely to be out of school and wanting more education. As in the case of high school students, white college students are more likely to report leaving school because they have completed their degrees. Minorities, particularly Hispanics, tend to leave, however, because of money problems or to find work.

Most out-of-school youth in 1979 were high school graduates who had not gone on to college, but large differences appear by race. Whites were most likely to be high school graduates; over half the out-of-school Hispanics are high school dropouts; the proportion of black dropouts falls between the proportions for whites and Hispanics. In general, women in each racial group tend less to drop out and more to attend college than their male counterparts. Most of the out-of-school sample failed to meet their educational goals. Failure rates for 1979 goals were highest for minority females and for black males. Getting a degree is the reason most whites give for leaving school, but for Hispanic men, leaving is more often attributed to going to work. Minority men are more likely to leave school to work than women.

Chapter Five, "Long-term Outcomes of Government-Subsidized Employment and Training Programs," finds that such programs had little effect on subsequent employment, either in terms of pay or of job satisfaction. Nor did programs seem to reduce the likelihood that a participant would be on welfare in 1981. The amount of welfare received may actually have been increased for some participants. For women, being in subsidized employment in 1980 and receiving job counseling in 1979 were both related to receiving higher amounts of welfare in 1981. Some participants may have been made more aware, through program participation, of the range of welfare support available and were thus able to increase their level of support.

Educational services appear to provide a means for program participants to reach at least a high school level. It appears that CETA helped provide this entry-level educational certification to youth who might otherwise not have done so.

Subsidized employment serves to help youth obtain a high school degree, at least for 1978 males and 1979 females. Education is linked with job satisfaction for young women and with not being on welfare for men who participated in 1978. For the women, the services reported as job counseling seem to be related to remaining in subsidized employment and in the welfare system. For both men and women, job counseling is negatively related to getting a diploma.

As might be expected, programs reported for the 1980 calendar year appear more likely than programs reported in earlier years to have a substantial (or at least statistically significant) relationship to 1981 outcomes. Results for longer time periods should be more affected than results for shorter periods by the diversity of events which affect individuals, making the effects of training harder to identify reliably.

Government training programs show no large effects, perhaps due to the variability of program quality inherent in a decentralized system. Through the basic education service, more participants receive high school diplomas or their equivalent than do comparable youth among the non-participants.

Chapter Six, "The High School Dropout in an Overeducated Society," finds that by 1982 4.8 million youth, representing 14 percent of the 17-24 age youth cohort, had left high school and had no diploma or GED certification. The dropout problem is particularly acute for the ethnic minorities. Among white youth, regional variation in dropout prevalence is substantial.

Sex differences in dropout prevalence are relatively slight. A high proportion of nonfinishers are black youth and a high proportion of early leavers are southern whites. The sex difference in dropout prevalence is due entirely to males' higher nonfinisher rate. Females' most frequently cited reasons for dropping out were family responsibility or pregnancy, dissatisfaction with school, and work-related problems. Males cited school dissatisfaction and work-related reasons. More striking are the differences in social origins between dropouts and youth who achieve higher levels of educational attainment. Fathers of dropout youth averaged only nine years of education, compared with 11 years for those of terminal high school graduates and 14 years for fathers of college graduates.

Estimation of 1982 wage and labor supply equations for all youth who in 1980 were either dropouts or terminal high school graduates shows the strong advantage of high school completion for all youth, regardless of sex or ethnic background. Completion via the GED, achieved by 6.1 percent of all high school graduates, brought only half the wage rate of return as did a regular diploma, however. By contrast, delayed completion in itself showed no disadvantage over on-time completion for males, although it did for females.

CHAPTER 1

THE NATURE AND CONSEQUENCES OF HIGH SCHOOL EMPLOYMENT

by
Ronald D'Amico*
and
Paula Baker

I. INTRODUCTION

Uncovering the factors that give rise to a smooth transition from school to work has been a high priority area for policy researchers for some time now. Nevertheless, identifying these factors, and indeed even recognizing successful labor market entrance, remains problematic. Certainly for many youth this transition is not a very satisfactory experience. A youth unemployment rate two to three times the national average as well as the often-observed substantially higher turnover rates of those under 25 years of age graphically underline that fact.

Among the factors which can improve the process of work establishment, work experience while still in school is often cited as being important. This study focuses on the effects of high school employment experience on job finding after leaving school and on the hourly wage and occupational status of post-school jobs held. An additional focus of the research will be to examine the extent to which work while in high school interferes with subsequent educational progress, including academic standing and the probabilities of dropping out of high school and attending college.

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II. WORK IN HIGH SCHOOL: PREPARATORY SOCIALIZATION OR DISTRACTION?

The employment of high school students is extensive. Shapiro (1979) estimates that in 1979 62 percent of high school students were also in the labor force, and Johnston and Bachman (1973) arrive at figures nearly that large in their sample of eleventh and twelfth graders. Moreover, Lewis, et al. (1983) show that a substantial proportion of these students usually work more than twenty hours per week during the school year.

Reasons why this high school employment might ease the transition to adult work roles are straightforward. Employed students can acquire skills which are of direct value to employers; this investment in human capital could result in relatively higher post-schooling earnings. Students could also be enhancing their stock of information about the world of work and forging contacts with prospective employers which improve the effectiveness of their post-school job matching process.

Second, high school employment can be viewed as a form of preparatory socialization which eases the psychological and social trauma associated with a major and unsettling transition for many people. Thus, those who have had some employment experience prior to assuming the full responsibilities of adult work roles could have had the chance to acquire appropriate work habits and attitudes and in other ways become more gradually acclimated to the new expectations being placed upon them.

Finally, as Lewis, et al. (1983) point out, the money which youth earn by working throughout the school year is by no means insubstantial. These sums can make an important contribution to a family's economic well-being, and for some youth may make the difference in enabling them to further their education.

At the same time, the costs associated with acquiring high school work experiences should not be glossed over, as they have in recent discussions of these issues (e.g. Meyer and Wise, 1982a). Working while attending school may distract youth from their primary role obligation at this life cycle stage. The time constraints implied by combining school and work roles may mean that insufficient time can be devoted to studying, with consequent implications for grade achievements. These considerations assume heightened importance in the context of recently voiced concern over falling standards of academic excellence (National Commission, 1983). Similarly, extracurricular participation, which has been shown to have advantages for educational outcomes (e.g., Hanks and Eckland, 1976) and psychological adjustment (Otto and Featherman, 1975), may also be precluded. All these considerations suggest that employment during the school year may interfere with normal educational progress and that working students may thereby end up with less than their optimal educational credentials. Indeed, these cross-cutting effects of high school work experience suggest Greenberger's (1983) recent observation that working a few hours per week may instill desirable work habits and attitudes, but any greater work obligations may exact a costly toll from the students' scholastic lives. These considerations lead us to pay particular attention to possible nonlinear effects of high school work experience on educational and post-schooling employment outcomes.

III. DATA AND METHODS

Previous investigations of the effects of high school employment have been hampered by limitations of available measures of high school work experience. Johnston and Bachman (1973) find modest to small effects of total months worked from eighth grade to the end of high school on post-school hourly wage and unemployment status. Meyer and Wise (1982a; 1982b) find substantial effects of "usual hours" worked in high school on weeks worked after leaving school, and smaller effects on hourly wage. Neither study has the luxury of considering more refined measures of high school work intensity. Moreover, Meyer and Wise, relying on data from the High School Class of 1972, can consider only those who have attained at least twelve years of schooling. Thus they cannot consider the effects of high school employment on the probability of dropping out. That these effects may be substantial is suggested by their observation that high school employment appears to be inversely related to the probability of attending college.

This study aims to circumvent these difficulties by using more detailed measures of high school employment and also of educational and employment outcomes. Not only will hours and weeks worked be included in all equations as measures of work intensity, but the effects of the quality of those employment experiences will also be examined. One difficulty in examining these issues relates to the possibility that any observed high school employment effects may be spurious reflections of pre-existing attributes of individuals not gained through work, but leading both to high school employment and to the other observed outcomes. Meyer and Wise (1982a) suggest this interpretation in explaining their findings of strong and persistent high school employment effects on weeks worked after leaving school. In order to mitigate this possibility here we attempt to identify and hold constant these pre-existing attributes and predispositions as much as possible.

Data for this study are taken from the 1979 through 1982 waves of the National Longitudinal Surveys of Youth. All analyses in this paper are restricted to those enrolled in grades 10 through 12 at some time since January 1, 1978 but not enrolled in those grades by the time of the 1982 interview. The latter restriction is implemented to allow some post-high school outcomes to be observed for all respondents. Of the original sample size of over 12,000 cases, just under 6,000 meet these conditions.

The two key high school work intensity varibles used in this study are "percent of weeks worked more than 20 hours during the school year" and "percent of weeks worked 1 to 20 hours during the school year." Because prior research has found only limited variation in the extent of summer employment among high schoolers and no effects of this employment on post-schooling outcomes (Johnston and Bachman, 1973), summer employment is not considered here. Moreover, to avoid considering summer employment which begins in the several weeks before the school term ends or which lasts several weeks beyond the start of a new term, the school year is defined for purposes of this study as beginning on September fifteenth and ending on the May fifteenth of the subsequent year.[1]

The work intensity variables are calculated from the extensive work history information collected in each survey year. In particular, start and stop dates, periods of interruption of employment, and usual hours worked are available from January 1, 1978 to the date of the 1982 survey for all jobs held that are "...not odd jobs... (but are) jobs done on a more or less regular basis." The one exception to this is those respondents who are under 16 years old on any given survey date, for whom data are available only on survey week job and jobs which are a part of government or school sponsored training programs. Accordingly, the high school work experience variables of especially those in grade 10 must be deemed to be an underestimate of actual work experience.[2]

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[1] Prior to the 1980 interview date, enrollment status is gauged by a question asking whether the respondent is currently enrolled, and, for those answering 'no,' the date last enrolled. For these survey years, enrollment status is assumed to be continuous from 9/15 of the preceding year to the interview date (interviews are generally conducted in the first few months of each year) for those reporting they are currently enrolled, or to date last enrolled for those not currently enrolled but enrolled sometime since the start of the school year. Moreover, for the first group, unless the subsequent year's interview reports a date last enrolled prior to 5/15 of the previous year, enrollment status is further assumed continuous to 5/15. Subsequent to the 1980 interview date, a monthly school attendance variable is available for each respondent. The school year is still defined as beginning on 9/15 and ending on 5/15 of the subsequent year, but the monthly enrollment status variable enables month-long interruptions in school attendance to be registered for each respondent.

Because of known non-additivities in the determination of educational and labor force outcomes, all results in this chapter are presented separately by sex and minority status. Minority status has two categories, "white" and "minority," with the second category consisting of black and Hispanic respondents and the first category consisting of all others.[3]

IV. THE EXTENT OF WORK AMONG HIGH SCHOOL YOUTH

The available data permit a variety of ways of characterizing the work experience of high school youth. Several of these are portrayed in Tables 1.1 and 1.2. These tables present for females and males, respectively, information on the extent of high school work experience by year in school and minority status.

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[2] The work intensity variables are calculated using the usual hours worked, start and stop dates, and intervening periods when not at work for all jobs reported from January 1, 1978 to the 1982 survey. By coordinating enrollment status information with work experience data for each week, and by summing usual hours worked for those working at more than one job in a given week or weeks, the employment status and hours worked for each week during each 9/15 to 5/15 period from 1979 to 1982 can be calculated. Employment during this interval in a month the respondent reported he or she was not attending school, and/or employment during this period after his or her reported date last enrolled are excluded from both the numerator and denominator in creating the "percent weeks worked more than 20 hours per week during the school year" and "percent weeks worked 1 to 20 hours per week during the school year" variables.

[3] Hispanics are not included in the "whites" catgory because of their status as a minority group. Combining blacks and Hispanics into a single equation doubtless masks some important differences between these two groups, but small sample sizes in some equations preclude estimating equations separately for each of them. Moreover, preliminary results showed the two groups to be more like each other in the processes under examination here than either group is like "whites."

Grade 10 Employment

As Michael and Tuma (1983) have shown, work experience even among very young high school youth is extensive. Thirty-eight percent of white females and nearly one-half of white males are employed at least one week during their sophomore year in high school. But while a substantial number of these youth apparently have some exposure to the labor market, the intensity of their work involvement is clearly limited. The average white male youth in grade 10 worked no more than one-fifth the school year and fewer than five hours per week. In fact, by far the majority of respondents who worked averaged fewer than 10 hours per week.

The work intensity figures for white males are larger than the corresponding figures for females, but the differences are rather modest. Compared with the quite substantial 12 percentage point difference in grade 10 employment rates in favor of males, these modest sex differences in the mean work intensity measures are all the more surprising. Tables 1.3 and 1.4 shed further light on sex differences in work intensity by presenting additional descriptive statistics on work experiences for females and males, respectively, with the universe restricted to those who had some work experience while attending any of the grades. For those in grade 10, as expected, sex differences in work involvement show a further narrowing, although males still show slightly greater work involvement than females. Similarly, both sexes show very stable employment patterns, with about three-

Table 1.1 Extent of School Year Employment for Females, by Year in School and Minority Status

Variables	Grade 10		Grade 11		Grade 12	
	Minority	White	Minority	White	Minority	White
% who worked:						
At least one week	21.4	38.0	37.8	62.5	52.8	71.1
Half the school year or more	5.7	14.0	21.1	42.0	37.3	53.8
Usual hours worked per week	1.6	2.9	4.0	7.9	8.2	12.4
% whose usual hours worked is:						
1 to 10 hours/week	16.1	27.7	23.6	27.7	19.3	21.7
Greater than 10 to 20 hours/week	3.9	7.9	8.8	23.1	18.9	22.9
More than 20 hours/week	1.4	2.3	5.4	11.7	14.7	26.4
Didn't work	78.6	62.0	62.2	37.5	47.1	28.9
% of weeks in school year worked:						
More than 20 hours/week	3.1	4.1	7.1	13.7	16.6	25.8
1 to 20 hours/week	5.8	13.8	14.4	28.5	19.7	26.8
Total % weeks worked	8.9	17.9	21.5	42.2	36.3	52.7
N	360	429	611	707	866	1100

UNIVERSE: Students enrolled for at least fifteen weeks in the grade labelled at the top of the columns. However, nearly all students enrolled for at least fifteen weeks were also enrolled for the entirety of the school year.

Table 1.2 Extent of School Year Employment for Males, by Year in School and Minority Status

Variables	Grade 10		Grade 11		Grade 12	
	Minority	White	Minority	White	Minority	White
% who worked:						
At least one week	35.5	49.6	52.8	70.8	62.0	75.0
Half the school year or more	12.7	16.1	28.8	48.9	41.1	57.2
Usual hours worked per week	3.7	4.3	6.9	10.6	11.4	14.9
% whose usual hours worked is:						
1 to 10 hours/week	22.2	35.0	24.6	28.1	19.5	19.1
Greater than 10 to 20 hours/week	7.8	10.0	17.1	22.1	18.3	21.1
More than 20 hours/week	5.5	4.6	11.1	20.7	24.3	34.7
Didn't work	65.5	50.4	47.2	29.2	38.0	25.0
% of weeks in school year worked:						
More than 20 hours/week	6.8	7.8	12.6	22.1	24.0	32.9
1 to 20 hours/week	9.9	13.8	18.6	26.0	18.5	23.2
Total % weeks worked	16.7	21.6	31.2	48.1	42.6	56.1
N	361	452	566	730	771	1098

UNIVERSE: Students enrolled for at least fifteen weeks in the grade labelled at the top of the columns. However, nearly all students enrolled for at least fifteen weeks were also enrolled for the entirety of the school year.

quarters of respondents accruing all their grade 10 work experience with a single employer. What is striking, however, is the substantial sex difference in mean hourly wage, with males averaging about 50¢ an hour more than females.[4] What the figures for whites seem to show, then, is a surprisingly substantial (for respondents so young) employment rate, especially among males, but with those who work showing on average quite limited amounts of work commitment.

Within each sex, differences in grade 10 employment across minority group status are if anything even more striking. As previously mentioned, nearly one-half of white males worked at least one week during the school year, but only 35 percent of minority males were so employed; thirty-eight percent of white females worked while in school, but the corresponding figure for minority females is only 21.4 percent. Interestingly, however, among males who worked at least one week, the inter-race differences do not show a consistent pattern of greater work commitment in favor of whites. In fact, among males who worked at least one week while in grade 10, blacks and Hispanics worked nearly 2 hours per week more on average than whites and they were over six percentage points more likely to be working an average of more than twenty hours per week during the school year. By contrast, among females, whites, who have the higher rate of employment, also demonstrate a higher degree of work intensity, although the latter difference is quite small. By implication, the very modest sex differences in work intensity observed among whites loom much larger among minority group members. Not only are black and Hispanic males much more likely than females to have worked at some time during the school year, but those who worked are substantially more likely to have usually worked 20 hours a week or more and they work on average three hours longer per week.

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[4] All hourly wage figures throughout this chapter are reported in 1982 dollars. The CPI index was used in adjusting figures.

Given the relative intensity of the work commitment among minority group males who work, it is tempting to infer that the race differences in employment rates might be due to the particular difficulties minority group members have in finding employment Indeed, the unemployment rates of minority teenagers are known to be substantially larger than the corresponding figures for whites (Santos, 1979). If discrimination or related factors do play such a role, there is no evidence of its operation once employment is secured. Although small sample sizes make these figures suspect, Tables 1.3 and 1.4 show that the hourly wages of male and female minority group members substantially exceed those of their white counterparts. Minority females earn 37¢ more than white females and minority males earn 16¢ more per hour than any other group.

Grades 11 and 12 Employment.

As one moves across the columns of Tables 1.1 through 1.4 to consider the employment experiences of youth in grades 11 and 12, one immediately sees a sharp and steady increase in all measures of labor force experience and work intensity for all four race/sex groups. For example, whereas 38 percent of white females worked at least one week in grade 10, 62.5 percent did so in grade 11 and 71.1 percent did so in grade 12; whereas 14 percent worked half the school year or more in grade 10, 42 percent did so in grade 11 and 53.8 percent did so in grade 12; the average white female worked 2.9 hours per week in grade 10, but over 12 hours per week by grade 12. Similarly, among those who worked at least one week, Table 1.3 shows that 6.1 percent of white females worked an average of more than 20 hours per week in grade 10, but by

Table 1.3 Nature of School Year Employment for Females Who Worked, by Year in School and Minority Status

Variables	Grade 10		Grade 11		Grade 12	
	Minority	White	Minority	White	Minority	White
Usual hours worked per week	7.4	7.7	10.6	12.6	15.6	17.4
% whose usual hours worked is:						
1 to 10 hours/week	75.2	72.9	62.4	44.3	36.6	30.5
Greater than 10 to 20 hours/week	18.2	20.9	23.2	37.0	36.8	32.2
More than 20 hours/week	6.5	6.1	14.3	18.7	27.8	37.2
% of weeks in school year worked:						
More than 20 hours/week	14.5	10.8	18.8	21.9	31.4	36.3
1 to 20 hours/week	27.1	36.3	38.1	45.6	37.2	37.7
Total % weeks worked	41.6	47.1	56.9	67.5	68.6	74.1
Average hourly wage[1]	2.50	2.13	2.81	2.55	2.91	3.07
Number of employers (%):						
1	84.5	76.8	82.5	68.1	76.1	69.6
2	13.8	16.8	15.0	25.6	19.2	22.5
3 or more	1.7	6.4	2.6	6.3	4.7	8.0
N	77	163	231	442	458	782

UNIVERSE: For the first two columns of figures restricted to those enrolled for at least 15 weeks in grade 10 who worked at least one week while attending this grade: for the third and fourth columns, to those enrolled at least 15 weeks in grade 11 who worked at least one week while attending this grade: and for the final two columns, to those enrolled for at least 15 weeks in grade 12 who worked at least one week while attending this grade.

[1] All hourly wage figures are reported in 1982 dollars.

Table 1.4 Nature of School Year Employment for Males Who Worked, by Year in School and Minority Status

Variables	Grade 10		Grade 11		Grade 12	
	Minority	White	Minority	White	Minority	White
Usual hours worked per week	10.5	8.7	13.0	15.0	18.3	19.9
% whose usual hours worked is:						
1 to 10 hours/week	62.5	70.6	46.6	39.7	31.4	25.5
Greater than 10 to 20 hours/week	22.0	20.2	32.4	31.2	29.4	28.1
More than 20 hours/week	15.5	9.3	21.0	29.2	39.2	46.3
% of weeks in school year worked:						
More than 20 hours/week	19.2	15.8	23.9	31.2	38.7	43.9
1 to 20 hours/week	27.9	27.8	35.2	36.7	29.8	31.0
Total, % weeks worked	47.1	43.6	59.1	67.9	68.6	74.9
Average hourly wage[1]	2.88	2.72	2.86	2.93	3.12	3.27
Number of employers (%):						
1	70.9	71.9	74.0	67.9	76.5	69.2
2	20.9	22.2	21.6	25.3	18.9	24.4
3 or more	8.2	6.0	4.4	6.8	4.6	6.4
N	128	224	299	517	478	823

UNIVERSE: For the first two columns of figures restricted to those enrolled for at least 15 weeks in grade 10 who worked at least one week while attending this grade: for the third and fourth columns, to those enrolled at least 15 weeks in grade 11 who worked at least one week while attending this grade: and for the final two columns, to those enrolled for at least 15 weeks in grade 12 who worked at least one week while attending this grade.

[1] All hourly wage figures are reported in 1982 dollars.

grade 12 37.2 percent did so. Equally striking patterns appear for each of the other race/sex groups. By grade 12 we observe that about two-thirds to three-quarters of all groups except minority females work sometime during the school year, with nearly 40 percent of all four groups working more than half the weeks of their senior year in high school. Moreover, those who work show astonishingly high levels of work intensity; nearly one-half of white males who worked in grade 12 did so an average of more than 20 hours per week throughout the school year. Despite this increased work intensity, however, the predominance of attachment to only one employer continues. About 70 percent of all race/sex groups work for just one employer in each school year.

Given that all race/sex groups show roughly parallel increases in labor force participation and work intensity over the three school years, we might expect the race and sex differences in work experience we observed in grade 10 to apply with equal force in grades 11 and 12. In general this is true. Males of both races show higher levels of labor force participation and work intensity than females, and whites show higher levels than minorities. But some notable differences emerge by grade 12. Minority males have lost their edge in work intensity to white males, and more strikingly minority members of both sexes have lost their advantage in average hourly wage. By grade 12, white males earn $3.27 an hour, followed by minority males at $3.12, white females at $3.07 and lastly minority females at $2.91. Whatever advantage minority group members had in grade 10 has obviously and decisively disappeared by grade 12. In any case, as judged by these hourly wage figures, the sorts of jobs young people have are obviously not lucrative; even white males are earning on average less than the 1982 minimum wage of $3.35 an hour for covered employment.

A further look at the kinds of jobs youth hold in high school is given in Table 1.5, which presents Census 1-digit occupation and industry distributions for the grade 12 survey week job for each race/sex group.[5] Predictably, the bulk of employment for females occurs in clerical, service and to a lesser extent sales occupations, with slightly more minority than white women in clerical occupations. Service work constitutes the largest single category of employment for males, with laborers and operatives also accounting for sizable portions of male youth employment. Doubtless, the fact that one-third of youth employment in all race/sex categories is in service occupations reflects the heavy reliance of fast food and similar establishments on young workers. But beyond this, the familiar sex segregation into occupational roles has already begun to appear in even these very early labor force episodes. Somewhat surprising at first glance is the substantially higher average Duncan SEI score for female workers, with minority females actually leading all other groups. Their status likely derives from the preponderance of women in white collar occupations at an age where males have not yet established their footholds in professional and managerial occupations.

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[5] While the NLS collects complete hours and weeks worked information for each year for all youth sixteen years of age and older, occupation, industry and hourly wage data are available only for: (a) the survey week job, and (b) all other jobs held which lasted for 9 weeks or more _and_ whose usual hours worked per week was at least 20 hours. In order to avoid unduly biasing job characteristics data by disproportionately counting jobs of longer and steadier duration, all occupation, industry and hourly wage data for school year jobs used throughout this chapter refer to survey week jobs only. For those who worked at more than one job during the school year, job characteristics of survey week job only are used; for those who worked sometime during the school year but were not employed at the time of the survey, occupation, industry and hourly wage data are considered NA; for those few respondents interviewed after May 15 in a given year, occupation, industry and hourly wage data are similarly considered NA. The implication of the decision not to use non-survey week job data where available, however, means that sample sizes are somewhat smaller than they might otherwise be.

Table 1.5 Grade 12 Occupation and Industry Distribution for Those Who Worked, by Sex and Minority Status

Variable	Female		Male	
	Minority	White	Minority	White
Occupation (%):				
Professional, technical and kindred	1.0	1.7	2.4	2.6
Managers and administrators, exc. farm	0.7	0.8	1.0	1.5
Sales	11.0	11.3	5.4	7.3
Clerical	44.9	36.1	9.1	6.7
Crafts	0.7	1.0	8.4	9.7
Operatives	3.8	3.5	14.2	13.5
Laborers, exc. farm	2.7	2.5	19.9	21.0
Farm managers and laborers	-	0.8	3.0	6.2
Service workers	34.2	36.7	36.5	31.3
Private household	1.0	5.6	-	.2
Average Duncan SEI score	33.9	31.2	21.2	21.3
Industry (%):				
Agriculture, forestry, fisheries	-	1.4	4.1	7.3
Construction	0.3	0.6	5.7	4.3
Manufacturing	5.2	5.8	9.1	10.3
Wholesale and retail trade	45.7	54.6	44.6	54.4
Services, exc. professional	7.1	12.2	12.9	11.6
Professional services	31.3	17.7	16.9	7.1
Public administration	5.5	1.9	2.4	1.9
Other (inc. mining, utilities, and finance)	4.8	5.9	4.3	3.0
N	291	515	296	533

UNIVERSE: Students attending grade 12 for at least 15 weeks, who reported a survey week job and who were interviewed during the school year.

The reliance of youth upon fast food establishments for work experience is again apparent in the industry distributions. Wholesale and retail trade accounts for roughly 50 percent of the employment of youth in all race/sex categories, though for whites somewhat more than for minorities. Other industries accounting for a sizable share of youth employment are service industries and, to a lesser extent, manufacturing.

Employment over the School Years.

Looking at youth employment cross-sectionally, as we have to this point, does not enable us to examine the patterns of youth employment across school years. Table 1.6 sheds an interesting light on this matter by reporting frequencies of the patterns of youth employment and nonemployment in each of grades 10, 11 and 12. A '1' in any of the three leftmost columns indicates employment for at least one week during that school year; a '0' indicates no employment in that year. Thus, the percentages identified by the row heading '111' indicates the percent of youth employed in each of their tenth, eleventh and twelfth years in school; the row headed '000' indicates the percent employed in none of those years. The predominant patterns of youth employment become quite clear in this display. Among whites, only 15 percent of males and 18 percent of females have been employed in none of these three high school years. By contrast, 38.5 percent and 28.2 percent, respectively, have been employed during some portion of all three years. As earlier tables have shown, about 70 percent of whites of both sexes are employed in their senior year. The striking pattern for whites of both sexes is for grade 10 employment to be associated with employment in both grade 11 and grade 12, and for employment in grade 11 to be overwhelmingly associated with employment in grade 12. That is, discontinuous employment histories are by far the

Table 1.6 Patterns of High School Employment, by Sex and Minority Status (%)

Worked in grade*			Female		Male	
10	11	12	Minority	White	Minority	White
0	0	0	37.5	18.1	26.8	15.0
1	0	0	2.9	3.1	2.4	3.0
0	1	0	8.7	4.9	5.4	6.3
1	1	0	2.5	4.2	2.4	4.3
1	0	1	3.3	2.4	2.0	1.7
0	0	1	18.8	15.0	16.6	9.0
0	1	1	14.6	24.0	20.5	22.3
1	1	1	11.7	28.2	23.9	38.5
N			240	287	205	301

*A '1' under a column indicates employment at least one week while in that grade in school. A '0' indicates no employment in that grade.

NOTE: Respondents in this table attended and were interviewed in each of their sophomore, junior and senior years of school.

exception. In all these characteristics, white males and females are certainly more alike than different.

However, differences across minority group status within each of the sexes are pronounced. In particular, minority group members are much more likely to have been employed in none of the school years (26.8 percent of males and 37.5 percent of females) and much less likely to have been employed in all three years (23. 9 percent of males and 11.7 percent of females). They also display patterns of discontinuous employment somewhat more frequently, possibly reflecting a greater inability to find employment when it is desired. And, as earlier tables have shown, sex differences among minority groups are far more pronounced than they are among whites. Relative to minority males, minority females are half again as likely to accrue no employment experience during high school and half as likely to have been employed in all three years.

In summary, these descriptive data on the high school work experience of youth reveal the following patterns: (1) Even as of grade 10 a surprisingly large proportion of high schoolers report some work experience during the school year, ranging from just over one-third of minority females to nearly 50 percent of white males. Those who work, however, report only very modest levels of work intensity. (2) By grade 12 all groups report drastically higher levels of labor force participation and work intensity. Three quarters of white males work at least one week during the school year and nearly 60 percent work half of the school year or more. Among all race/sex groups those who work average between 15 and 20 hours per week throughout the school year. (3) Males report consistently higher employment rates and levels of work intensity than females, and whites report higher levels than do minority group members. Sex differences are more pronounced among minorities than among whites. (4) The minority group advantage in grade 10 hourly wage has been completely reversed by grade 12, with whites earning an average of 15¢ more per hour. (5) All race/sex groups across all years in school report very stable employment experiences, with three-quarters working for only one employer in any given year. (6) The distribution of youth workers in grade 12 across industry and occupation categories shows that trade establishments predominate in employing high school youth. Females are heavily represented in service, clerical and sales occupations, and males in service, laborer and operative categories. (7) Among whites over four-fifths of both males and females have accumulated some labor force experience while in high school. A substantial number have been employed in all three years. Compared to whites, nearly twice as many blacks and Hispanics have accumulated no work experience and half as many have been employed continuously throughout these three years of school.

V. THE CONSEQUENCES OF HIGH SCHOOL EMPLOYMENT

The previous section has revealed that the labor market experiences of youth are both extensive and intensive. The next four sections will attempt to gauge the consequences of this employment for four sets of outcomes. The first section will examine consequences for high school experiences, including class rank and study time. The second will examine the extent to which high school employment is associated with educational advancement, namely dropping out of high school or attending college. The third section examines the issue of whether high school employment eases the transition to post-school employment by decreasing the incidence of unemployment. Finally the quality of post-school employment experiences will be assessed by estimating hourly wage and Duncan SEI equations measured both at the first survey after leaving school and the third survey out. As in previous tables, all results are displayed separately by sex and minority status. In all these equations the primary measures of high school work experience used are 'percent of weeks during the school year worked more than 20 hours per week' and 'percent of weeks worked 1-20 hours per week.' While any of a number of other measures of the intensity of high school work involvement could have been used, these were decided upon because: a) they combine both the extensivity and intensivity dimensions of work experience by using information about both number of weeks worked during the school year and number of hours worked per week, and b) they explicitly allow nonlinearities in the effects of work intensity, by allowing work of less than 20 hours per week to have different effects than more intensive work involvement.

Control variables used in various of these equations include educational expectations (or a variable measuring whether the respondent dropped out of high school, for the non-college goer post-school work experience equations); measures of background characteristics (specifically, whether the respondent lived with both parents at age 14 and the education of the household head); marital status; number of children; and, for minority group equations, 'Hispanic,' a dummy variable coded '1' if the respondent was Hispanic, and '0' if black. For purposes of easy reference, variable labels are presented with variable descriptions, as well as with means for each race/sex group, in Table 1.7. Fuller detail on the measurement of dependent variables will be presented as the regression results are described.

The multivariate methods used in the following sections enable us to identify the relationship between high school employment and the outcome variables net of the possibly confounding role of the control variables. But the analyses still cannot permit us to unambiguously identify the causal

Table 1.7 Variable Descriptions and Means for Variables Used in Regression Analyses, by Sex and Minority Status

		Means			
		Female		Male	
Variable	Variable Description	Minority	White	Minority	White
Key independent variables					
% of weeks worked more than 20 hours/week	Percent of weeks during the high school year R worked more than 20 hours/week	08	.13	.13	.21
% of weeks worked 1-20 hours/week	Percent of weeks during the high school year R worked 1-20 hours/week	.13	.27	.18	.25
Dependent variables					
Rank	R's class rank/class size	.56	.42	.60	.54
Study time	Hours R spent studying, survey week 1981	9.08	8.62	8.81	7.32
Free time at h.s.	Hours R spent at school not studying or attending classes, survey week 1981	4.19	3.78	4.26	5.63
Knowledge of work	R's knowledge of 9 occupation tasks (0 to 9), 1979	4.76	5.94	4.87	6.09
College	Did R attend college? (1=yes; 0=no)	.48	.44	.37	.46
Dropout	Did R drop out of high school? (1=yes; 0=no)	.23	.21	.32	.24
% weeks unemployed in first year out	Weeks unemployed in 52 weeks after leaving high school/weeks in the labor force	.44	.27	.33	.22
Unemployment before first job	Weeks unemployed since leaving high school before R found a job	9.29	4.91	6.63	4.34
Wage, first year out	Hourly wage at first survey after leaving high school, in cents (1982 dollars)	373.6	368.6	436.2	493.5
Wage, third year out	Hourly wage at third survey after leaving high school, in cents (1982 dollars)	446.7	420.2	572.4	591.5
Duncan, first year out	Duncan score of occupation in first survey after leaving high school	32.8	32.6	20.0	21.0
Duncan, third year out	Duncan score of occupation in third survey after leaving high school	33.0	35.2	24.0	23.2
Control variables					
Educational expectations	R's educational expectations, 1979	13.9	13.9	13.7	13.8
Both parents present	R lived with (step) father and (step) mother at age 14 (1=yes; 0=no)	.64	.83	.64	.84
Head's education	Father's education (or mother's education if NA)	9.6	11.6	9.6	12.0

Table 1.7 (Cont.)

Variable	Variable Description	Means			
		Female		Male	
		Minority	White	Minority	White
Control variables cont.					
Marital status	Marital status in year outcome is measured	.11	.14	.06	.07
# of children	Number of children in year outcome is measured	.19	.04	.10	.04
Hispanic	0=black; 1=Hispanic (minority equations)	.41	-	.38	-
N of cases		611	748	597	774

NOTE: Sample sizes and means of all independent variables except marital status and # of children are from the DROPOUT equation using listwise deletion. Means for marital status and # of children are from the 'wage, first year out' equation. Universes, resultant sample sizes, and the year in which independent variables are measured vary with each outcome variable equation and are defined as the multivariate results are presented.

impact of high school employment since unobserved characteristics of those who worked may in fact account for observed differences on outcome variables. For example, if one observes a significant negative coefficient associated with high school employment in the weeks of unemployment equation one could argue either that working while in high school imparts job search skills and information about the labor market which reduces unemployment or that the higher motivations of some students cause them both to work while in high school and to engage in more diligent job search upon leaving school which reduces subsequent unemployment. In the following sections, interpretation of coefficients associated with the high school employment variables will be couched in causal terms, but the existence of unobserved heterogeneity as an alternate explanation for the findings should be borne in mind.

Effects on High School Experiences

Among the most obvious and feared effects of youth employment that might be expected is that work involvement might detract from the amount of time students spend on their homework and might consequently lower the student's academic standing. Given the extent of youth employment, as shown in the preceding section, these effects could be substantial. Similarly, the time spent in employment might restrict the student's participation in extracurricular activities or other free time at school spent interacting with peers. Previous work suggests this may be unfortunate, since extracurricular participation has been shown to promote educational ambition and scholastic achievement (Hanks and Eckland, 1976) and retard delinquency (Landers and Landers, 1978; D'Amico, 1983). On the positive side, however, youth employment may provide the worker with first hand experience in the labor market which should enhance his or her pool of quality information about the world of work and available job opportunities. This information is potentially very valuable in the post-schooling job matching process.

These hypotheses are examined by observing the effects of the work intensity measures, net of appropriate controls, on the following four outcome variables: (1) the respondent's relative class rank, (2) hours spent studying, (3) free time spent at school, and (4) the nine-item knowledge of the world of work scale. The first of these is taken from the transcript survey of NLS respondents, and is measured as of the last year enrolled in high school as the respondent's class rank divided by the class size. Low numbers thus indicate a high class rank and high numbers indicate a standing near the bottom of the class. The second and third items are taken from the time-use survey included in the 1981 questionnaire. As part of the time-use sequence, youth currently enrolled in high school were asked the number of hours they spent studying within the past seven days. Free time at school was estimated as the remainder of the total time in hours each respondent spent at school in the last seven days minus the time spent during this interval attending classes, studying or attending lectures or labs; it is taken to be an indicator of the degree of participation in extracurricular or other leisure time activities at school. Both of these measures have been shown to have adequate reliability and validity as indicators of usual time expenditures at these activities (Baker, et al., 1983). Finally, knowledge of the world of work was administered in 1979 as a nine item scale querying youth on their knowledge of the job tasks of nine different occupational specialities. The '% weeks worked' independent variables are measured for the school year in which the outcomes variables are measured. Since earlier tables have shown that high school work intensity increases as youth progress through school, a variable measuring the respondent's grade in school at the time the outcomes were measured is included in all equations as a control. However, for the 'rank,' 'study time' and 'free time' equations, nearly all youth were in the twelfth grade.

Results of the analyses are reported in Table 1.8 for white and minority females and in Table 1.9 for males. In general these results do not show grave cause for alarm. Percent of weeks worked 20 or more hours does modestly reduce the amount of time white males spend studying and does limit free time spent at school for both minority females and white males. But these effects are all rather small and do not emerge at all for either white females or minority males. Moreover, work commitment at 1 to 20 hours per week has no such adverse effects for any race/sex group, and even boosts the knowledge of the world of work for females of both race groups. Finally, whatever constraints high school employment poses for studying, no adverse effects of any sort or for any race/sex group appear for either work intensity measure in the class rank equations. In short, the picture presented by these results is that very intensive work involvement may pose some modest time constraints for some race/sex groups but that these do not retard academic standing. Less intensive work involvement shows no adverse consequences of any sort.

Effects on Educational Completion

While high school employment has no apparent negative effects on class rank, it may nonetheless deter youth from their initial educational ambitions. Early forays into the labor market may cause youth to prematurely lose their enthusiasm for schooling or allure them with the prospect of financial independence into abandoning any further educational investments. This section examines these issues by analyzing the effect of the two high school employment measures on the probability of dropping out of high school

Table 1.8 Regression Analysis of Effects of High School Work Experience on Adolescent Experiences for Females, by Minority Status

	Minority				Whites			
Independent variables	Rank	Study time	Free time at h.s.	Knowledge of work	Rank	Study time	Free time at h.s.	Knowledge of work
% weeks worked more than 20 hours/week	-.065 (-.067)	-2.505 (-.085)	-3.299* (-.140)	.510 (.060)	.037 (.042)	-2.281 (-.086)	-1.299 (-.070)	.073 (.010)
% weeks worked 1-20 hours/week	-.073 (-.085)	.801 (.029)	-.312 (-.014)	.696** (.100)	-.055 (-.070)	-2.264 (-.098)	-1.517 (-.094)	.455** (.077)
Educational expectations	-.055** (-.407)	.450 (.107)	.092 (.027)	.141** (.162)	-.050** (-.361)	.332 (.082)	-.183 (-.065)	.219** (.244)
Both parents present	-.093* (-.158)	.620 (.033)	.657 (.044)	.086 (.022)	.004 (.005)	1.305 (.058)	.129 (.008)	-.191 (-.038)
Head's education	-.012* (-.166)	.170 (.073)	.040 (.021)	.100** (.206)	-.000 (-.004)	.074 (.027)	-.032 (-.017)	.047** (.082)
Grade in school	.003 (.006)	2.241* (.136)	.638 (.049)	.263** (.137)	-.059* (-.107)	.892 (.060)	1.610* (.152)	.493** (.259)
Hispanic	.002 (.004)	-.224 (-.012)	.724 (.050)	.388** (.099)	-	-	-	-
Constant	1.51	-25.29	-5.09	-1.33	1.83	-7.26	-11.63	-2.91
R^2	.273	.052	.025	.139	.156	.030	.028	.198
N	215	277	239	853	347	323	285	1055

NOTE: See Table 1.7 for brief variable descriptions and the text for fuller details. Numbers are metric coefficients with standardized values in parentheses. The '% weeks worked' variables are measured for the school year in which the outcomes are measured.

*Significant at the .05 level.
**Significant at the .01 level.

Table 1.9 Regression Analysis of Effects of High School Work Experience on Adolescent Experiences for Males, by Minority Status

Independent variables	Dependent variables							
	Minority				Whites			
	Rank	Study time	Free time at h.s.	Knowledge of work	Rank	Study time	Free time at h.s.	Knowledge of work
% weeks worked more than 20 hours/ week	-.032 (-.036)	-2.970 (-.103)	-2.951 (-.133)	-.151 (-.021)	-.042 (-.053)	-3.069* (-.132)	-4.492** (-.194)	-.200 (-.032)
% weeks worked 1-20 hours/week	-.092 (-.094)	-1.386 (-.052)	-1.436 (-.069)	.129 (.018)	-.081 (-.095)	-1.026 (-.044)	-1.908 (-.082)	.003 (.000)
Educational expectations	-.059** (-.436)	.217 (.052)	.129 (.040)	.242** (.277)	-.059** (-.441)	.788** (.220)	-.225 (-.063)	.175** (.202)
Both parents present	.004 (.007)	1.079 (.058)	1.428 (.098)	-.167 (-.042)	-.017 (-.020)	1.448 (.068)	-.693 (-.033)	.108 (.021)
Head's education	.001 (.016)	.012 (.006)	-.044 (-.026)	.044** (.089)	.001 (.000)	-.012 (-.005)	.324* (.132)	.050** (.089)
Grade in school	-.006 (-.011)	.832 (.065)	1.006 (.100)	.205** (.113)	-.012 (-.021)	.375 (.031)	.267 (.020)	.479** (.258)
Hispanic	-.052 (-.087)	-.949 (-.052)	-1.464 (-.103)	.570** (.145)	-	-	-	-
Constant	1.54	-3.42	-8.32	-1.19	1.57	-8.06	3.96	-2.10
R^2	.219	.026	.050	.139	.208	.068	.046	.162
N	199	259	219	837	281	350	316	1105

NOTE: See Table 1.7 for brief variable descriptions and the text for fuller details. Numbers are metric coefficients with standardized values in parentheses. The '% weeks worked' variables are measured for the school year in which the outcomes are measured.

*Significant at the .05 level
**Significant at the .01 level.

and on the probability of attending college. One difficulty with studies of these issues in the past has been the suspicion that the range of control variables used has not effectively controlled for pre-existing educational inclinations. Researchers have consequently been obliged to hedge whenever negative effects of high school employment on subsequent educational progressions have been observed. To mitigate the possibility of spurious effects being observed in this paper, educational expectations, measured in the first survey year, is included in these equations. Only respondents still enrolled in high school at the time the educational expectations item was asked are included in these analyses. The effects of high school work intensity can therefore be interpreted as consequences for subsequent educational progress net of initial educational expectations.

For the dropout equations, the '% weeks worked' variables were measured for most respondents as of grade 11. For those who had missing data on grade 11 employment, employment while in grade 10 was used. As before, a variable measuring from which of the two years the high school work experience is measured is included in all equations. For the college attendance equations, employment while in grade 11 is used for everyone.[6] Since both 'dropout' and 'college attendance' are dichotomous variables, probit analysis was employed.

Table 1.10 reports on these analyses. The results show some conflicting patterns but in general do not suggest that high school employment is an important impediment to educational progression. Indeed, working at modest intensity levels actually appears to foster greater educational perseverance.

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[6] Work intensity was measured as of grade 11 rather than grade 12 to minimize problems of reciprocal causation. For example, seniors who had definitely decided against college or who had been rejected from the colleges of their choice might increase their work intensity in preparation for post-schooling employment.

Table 1.10 Probit Analysis of Effects of High School Work Experience on Educational Attainment, by Sex and Minority Status

Independent variables	Females				Males			
	Minority		White		Minority		White	
	Dropout	College	Dropout	College	Dropout	College	Dropout	College
% weeks worked more than 20 hours/week	-.112	.067	.379	-.502*	.012	-.164	.047	-.349*
% weeks worked 1-20 hours/week	-.606*	.492*	-.481*	.160	-.155	-.052	-.414*	.151
Educational expectations	-.237*	.264*	-.224*	.370*	-.179*	.313*	-.249*	.345*
Both parents present	-.402*	.010	-.417*	.052	-.145	.077	-.426*	.288
Head's education	-.020	.030	-.033	.087*	-.017	.050*	-.038	.092*
Number of children in first survey after high school	.571*	-.633*	1.295*	-1.462*	.375*	-.694*	.046	-1.596*
Age in 1982	-	-.081	-	.137	-	-.035	-	.007
Grade when work experience is measured	-1.504*	-	-1.623*	-	-1.414*	-	-1.625*	-
Hispanic	.373*	-.086	-	-	.115	.185	-	-
Constant	3.94*	-2.37	4.13*	-9.023*	3.35*	-4.61*	4.87*	-6.42*
N	611	545	748	668	597	515	774	690

NOTE: See Table 1.7 for brief variable descriptions and the text for fuller details. Numbers are maximum likelihood estimates.

*Indicates coefficient is at least 1.98 times its standard error.

Specifically, females of both race groups and white males who work from 1-20 hours per week during the school year are less likely to drop out of high school. Working at higher levels of work intensity has no significant effects on the probability of dropping out for any race/sex group. Perhaps the positive effects of high school employment emerge because employed youth have the financial resources to subsidize their educational expenses, or because employment fosters habits of diligence and perseverance, or because employment at what are usually low-paying jobs attunes youth to the need for educational credentials. In any case, concern that employment may impede high school progress appears to be wholly unfounded for each of the four race/sex groups examined here.

Things are more complicated when the probability of college attendance is examined. For both white males and white females grade 11 employment at the higher work intensity levels does significantly decrease the probability of college attendance. Possibly, whites who find remunerative employment while in high school are tempted to defer their college plans at least temporarily to pursue full-time employment. If this is the case, policy implications of these results are not straightforward. Given recent evidence of declining returns to college education (Freeman, 1975), interrupting college plans to take advantage of an attractive employment opportunity may well represent a careful and rational choice. In any event, the effects observed here for both groups are modest in size and in fact just reach the threshold for statistical significance. Moreover, no negative effects of employment at the lower intensity level appear for any race/sex group, and minority females actually appear to be spurred to college attendance the more weeks they worked at 1-20 hours/week.

Effects on the Transition to Employment

Among the advantages of high school employment that could be hypothesized is that such work would ease the transition to post-school employment, at least for those who do not go on to college. By providing advance information about job opportunities, fostering the formation of valuable personal contacts, or actually providing a job opportunity upon school-leaving, high school employment can smooth the turbulence of the post-school job matching process. Moreover, such work experience may increase one's attractiveness to employers by signaling that the job applicant may be industrious, ambitious or already have useful job skills. Two measures of the smoothness of the school-to-work transition examined here are the proportion of weeks unemployed to total time in the labor force for the 52 week interval after school leaving, and total number of weeks unemployed from date last enrolled to the time the respondent's first job began. Both of these variables should provide some indication of the ease with which the erstwhile students handled the difficult immediate post-schooling period. Analyses of both variables are restricted to those sample members who had not attended college, since effects of high school work intensity should be pronounced for this group.[7] Both the high school work intensity variables were measured for the respondent's last year in high school. Also in these equations, whether the respondent dropped out or completed high school replaces educational expectations as a control. This variable also effectively serves to control whether the work intensity variables were measured as of the senior year or earlier.

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[7] To avoid needlessly excluding respondents who may have attended college only very briefly, the universe is actually restricted to those who had not completed grade 13 and who had not attended grade 13 in the academic year leading up to the 1982 survey. Wherever in this chapter the universe is defined as non-college youth, this slightly broader universe restriction is implied.

Table 1.11 reports on these analyses for each of the four race/sex groups. As hypothesized, high school work experience proves to be resoundingly useful in minimizing unemployment. For all race/sex groups both work intensity measures have significant and strong effects in reducing both the proportion of weeks unemployed in the 52 weeks after leaving school and the total weeks unemployed before finding employment. Moreover, comparing standardized coefficients in each case shows that working more than 20 hours per week in school is somewhat more effective in reducing unemployment than is working 1-20 hours per week. Unequivocably high school work experience substantially reduces the turbulence associated with getting established in the labor market.

Part of its effect may well be that high school jobs become post-school starting jobs or at least provide information about related job opportunities. If so, we would observe many respondents working for the same employer or at least working in the same job family in their pre- and post-school leaving employments. Table 1.12 examines these possibilities. The column labelled 'same employer' reports the percent of non-college youth who worked in high school whose employer in their first survey week job after leaving school was the same as an employer for whom they worked at some point during their final school year. The last two columns record the extent to which youths' survey week jobs in their last year in high school are in the same 1-digit occupation or industry categories as their first survey week job after leaving school. Although job mobility data aggregated at so high a level obscures much, the results shown here are suggestive. Results show that between one-fifth and one-quarter of non-college youth who worked during their last year in high school work for their same employer upon leaving school; about 50 percent work in the same 1-digit industry and 40 percent of whites

Table 1.11 Regression Analysis of Effects of High School Work Experience on the Transition to Work of Non-College Youth, by Sex and Minority Status

	Females				Males			
	Minority		White		Minority		White	
	% wks. unem-ployed in first year out	Unemploy-ment before first job	% wks. unem-ployed in first year out	Unemploy-ment before first job	% wks. unem-ployed in first year out	Unemploy-ment before first job	% wks. unem-ployed in first year out	Unemploy-ment before first job
% weeks worked more 20 hrs/wk	-.384** (-.290)	-12.42** (-.230)	-.223** (-.251)	-6.458** (-.199)	-.282** (-.289)	-7.575** (-.190)	-.196** (-.247)	-6.342** (-.214)
% weeks worked 1-20 hrs/wk	-.240** (-.166)	-10.52** (-.184)	-.189** (-.183)	-5.952** (-.165)	-.154** (-.130)	-5.839** (-.121)	-.102** (-.099)	-4.947** (-.135)
Dropout	.159** (.173)	2.192 (.052)	.143** (.182)	1.911 (.064)	.185** (.260)	6.033** (.203)	.172** (.263)	4.333** (.172)
Both parents present	-.039 (-.044)	.177 (.005)	-.071* (-.081)	-1.253 (-.040)	.059* (.081)	1.319 (.044)	-.057 (-.070)	1.917 (.062)
Head's education	-.002 (-.022)	-.106 (-.022)	-.008 (-.066)	-.297* (-.070)	.006 (.064)	-.017 (-.004)	-.006 (-.055)	-.169 (-.044)
Marital status	.045 (.040)	.754 (.015)	.040 (.050)	.162 (.005)	-.094 (-.056)	.705 (.010)	-.037 (-.026)	.540 (.011)
Number of children	.020 (.026)	.344 (.009)	.063 (.073)	1.344 (.041)	-.003 (-.003)	-1.334 (-.033)	-.056 (-.036)	4.60 (.008)
Hispanic	-.233** (-.271)	-7.824** (-.216)	-	-	-.089** (-.122)	-3.262** (-.110)	-	-
Constant	.619	17.09	454	11.65	.290	7.945	.352	6.24
R^2	.227	.131	.180	.078	.194	.105	.190	.104
N	424	478	617	761	503	608	655	823

NOTE: See Table 1.7 for brief variable descriptions. Numbers are metric coefficients with standardized values in parentheses. The '% weeks worked' variables are measured for the respondent's last year in high school.

*Significant at the .05 level.
**Significant at the .01 level.

Table 1.12 Percent Who did Not Attend College and Who Worked in High School Whose First Survey Week Job After High School is with the Same Employer, or in the Same One-Digit Occupation or Industry as Their Last School Year Job, by Sex and Minority Status

Universe	N	Same Employer	Same 1-digit Occupation	Same 1-digit Industry
Minority females	264	20.1	60.3	55.0
White females	459	23.5	50.9	45.4
Minority males	408	27.5	41.1	49.2
White males	518	28.2	39.6	51.2

UNIVERSE: Those who did not complete grade 13 and who were not enrolled in grade 13 during the academic year leading up to the 1982 survey.

and over half of the minority group work in the same 1-digit occupation. These findings can be looked at in two ways. On the one hand a substantial number of youth, possibly as many as half, by all appearances find employment upon leaving school with the same employer or in occupations or industries in the same job family as their high school employment. For many of these young workers, then, high school jobs serve as steppingstones for employment subsequent to leaving school. This seems especially true for minority females who may recognize few alternate post-schooling employment options. Cast in this light the low subsequent unemployment experienced by high school workers seems very understandable.

At the same time roughly as many young workers find post-schooling employment not in the same broad 1-digit occupational or industry category as their most recent previous employment experience. For these youth it seems doubtful that their school year employment provided any relevant job skills other than perhaps instilling very general desirable work habits, such as diligence or responsibility.

Effects on Subsequent Labor Market Success

Though school year employment apparently does reduce unemployment associated with the school to work transition, it remains to be seen how enduring these effects are. In this section the effects of school year work experience on the quality of jobs held one survey year and three survey years after leaving school are examined. The measures of post-school job quality used are Duncan SEI score of occupation held and hourly wage adjusted to 1982 dollars (see footnote 4).[8] School-year employment is measured for the respondent's last year in high school; once again the universe is restricted to non-college youth only.

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[8] The Duncan Socioeconomic Index is a widely used measure of occupational attainment and is computed as a weighted combination of the educational

Results of these analyses are presented in Tables 1.13 and 1.14 for females and males, respectively. Examining equations with outcome variables measured one survey after school leaving, note that positive and significant effects of high school work experience on Duncan SEI appear for all race/sex groups except minority males. However, only for white males are these effects as strong regardless of the level of intensity of the school year employment; for white and minority females, only work at greater than 20 hours per week seems to matter. High school employment at the higher intensity level is also significant in the "hourly wage, first year out" equations, though only for the two female race groups. Apparently, intensive work involvement while in high school does generally lead to more favorable employment opportunities in the immediate post-school period.

The effects on Duncan SEI score are, however, short-lived. Three survey years after leaving school all effects of school year employment on Duncan score have disappeared for all race/sex groups. At the same time, for minority group males and females and for white males, high school employment at the higher intensity level has important and strong effects on third year hourly wage. This finding is particularly intriguing for minority males, since for this group no effects whatever appeared on the first survey job after leaving school. In any case, these results are consistent with the recent observation of Becker and Hills (1983) that teenage labor market experience is especially beneficial for the longer-term labor market success particularly of black workers. It appears, then, that high school work

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attainment and earnings of incumbents of Census 3-digit occupations (Duncan, 1961). Its correlation with the prestige score of the 45 occupations for which both measures are available exceeds .90.

Table 1.13 Regression Analysis of Effects of High School Work Experience on Post-School Employment Success of Non-College Females, by Minority Status

	Dependent variables							
	Minority				White			
	Duncan first year	Wage first year	Duncan third year	Wage third year	Duncan first year	Wage first year	Duncan third year	Wage third year
% weeks worked more than 20 hours/week	6.084* (.129)	79.20** (.237)	5.988 (.116)	113.5* (.209)	5.391* (.111)	81.71** (.216)	-.827 (-.019)	23.57 (.073)
% weeks worked 1-20 hours/week	5.564 (.095)	27.44 (.068)	.033 (.001)	-4.515 (-.007)	4.184 (.076)	30.27 (.070)	.493 (.009)	26.96 (.065)
Dropout	-9.031** (-.191)	6.435 (.019)	-14.12** (-.263)	-96.45 (-.171)	-6.632** (-.124)	-47.78* (-.111)	-5.573 (-.102)	-45.63 (-.114)
Both parents present	-.494 (-.013)	-10.99 (-.040)	1.368 (.034)	-25.66 (-.061)	5.487* (.099)	27.93 (.064)	8.711** (.186)	25.53 (.074)
Head's education	.258 (.055)	.837 (.025)	.527 (.109)	7.614 (.148)	.478 (.070)	3.517 (.066)	.241 (.041)	5.514 (.125)
Marital status	-1.278 (-.022)	-34.53 (-.083)	-1.948 (.049)	-15.09 (-.036)	-.317 (-.006)	2.022 (.005)	4.094 (.112)	22.30 (.083)
Number of children	-2.926 (-.073)	-13.73 (-.047)	-5.234* (-.199)	8.531 (.034)	-3.483 (-.042)	-72.46* (-.100)	-2.694 (-.070)	-51.64** (-.182)
Weeks since date last enrolled	.113 (.074)	.124 (.011)	-.002 (-.004)	.184 (.030)	-.026 (-.016)	1.997** (.155)	-.061 (-.104)	-.034 (-.008)
Hispanic	7.974** (.218)	39.28* (.152)	8.619* (.232)	124.4** (.315)	-	-	-	-
Constant	22.37	328.7	26.60	307.6	20.04	205.85	33.31	340.5
R^2	.112	.084	.164	.140	.063	.104	.084	.096
N	236	232	125	123	482	465	239	234

NOTE: Numbers are metric coefficients with standardized values in parentheses. See Table 1.7 for brief variable descriptions. The '% weeks worked' variables are measured for the respondent's last year in high school.

*Significant at the .05 level.
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Table 1.14 Regression Analysis of Effects of High School Work Experience on Post-School Employment Success of Non-College Males, by Minority Status

	Dependent variables							
	Minority				White			
	Duncan first year	Wage first year	Duncan third year	Wage third year	Duncan first year	Wage first year	Duncan third year	Wage third year
% weeks worked more than 20 hours/week	3.730 (.107)	25.91 (.051)	-.206 (-.005)	196.87* (.194)	4.248** (.126)	20.71 (.031)	-.054 (-.002)	104.64* (.142)
% weeks worked 1-20 hours/week	-1.078 (-.025)	8.323 (.014)	-.421 (-.008)	-47.39 (-.038)	5.636** (.129)	-9.521 (-.011)	-.328 (-.007)	37.90 (.039)
Dropout	-3.350* (-.122)	-53.03* (-.131)	1.403 (.039)	32.90 (.035)	-3.244* (-.108)	-89.63** (-.150)	-4.860* (-.135)	-27.56 (-.036)
Both parents present	.498 (.018)	53.25* (.133)	3.527 (.105)	103.97 (.121)	1.128 (.031)	-.143 (-.000)	-.456 (-.010)	101.80 (.113)
Head's education	-.012 (-.004)	4.369 (.085)	.187 (.045)	-6.777 (-.065)	.252 (.054)	-.816 (-.009)	.386 (.080)	11.98* (.116)
Marital status	-2.864 (-.049)	64.87 (.079)	.638 (.014)	-39.96 (-.036)	1.036 (.020)	90.02 (.088)	2.287 (.068)	58.14 (.085)
Number of children	-1.416 (-.037)	104.99** (.184)	.995 (.042)	30.88 (.052)	-2.093 (-.033)	221.17** (.175)	-1.180 (-.040)	25.72 (.043)
Weeks since date last enrolled	.019 (.018)	1.476 (.097)	-.021 (-.037)	1.129 (.083)	.027 (.023)	.203 (.009)	-.060 (-.107)	1.590* (.140)
Hispanic	1.365 (.051)	55.59** (.143)	2.971 (.095)	35.92 (.046)	-	-	-	-
Constant	19.07	275.27	20.66	334.0	14.56	497.54	28.15	98.85
R^2	.035	.116	.029	.078	.052	.073	.050	.085
N	363	380	160	155	537	533	275	270

NOTE: Numbers are metric coefficients with standardized values in parentheses. See Table 1.7 for brief variable descriptions. The '% weeks worked' variables are measured for the respondent's last year in high school.

*Significant at the .05 level.

experience may help the immediate post-school occupational placement but that these effects lose relevance as youth accumulate additional labor market experience by which they may be judged. For hourly wages, however, the effects of school year employment at least at more than 20 hours per week are more enduring.

A further look at the mechanisms by which school employment impacts on post-school labor market success is presented in Table 1.15 for females and Table 1.16 for males, which show effects on the Duncan score and hourly wage of post-school jobs held of the Duncan score and hourly wage of school year jobs, respectively. The universe is further restricted here to those non-college youth who had some work experience in their last year of high school, since the question is whether high school work intensity or the character of school year jobs matters most for subsequent labor market success. The small sample sizes resulting from these universe restrictions and the possibility of biased coefficients resulting from the lagged dependent variables means these results should be considered exploratory only. Nonetheless, these findings are suggestive. Results show that the two work intensity variables have no effects on either of the first year out outcomes for any of the four cohorts. By contrast, the Duncan score and/or hourly wage of school year jobs have effects on year one employment success for all race/sex groups. This pattern suggests that perhaps not work intensity per se but the quality or character of high school jobs held matters most for immediate post-schooling labor market success. Put another way, school year employment does not impart general work habits that are subsequently rewarded by employers. If this were the case, the intensity of school year employment might be expected to matter more for the quality of immediate post-school jobs held than would the specific characteristics of the school year jobs. Rather, it appears that in

Table 1.15 Regression Analysis of Effects of Characteristics of High School Jobs on Post-School Work Experience of Non-College Females with Some High School Work Experience, by Minority Status

	Dependent variables							
	Minority				White			
	Duncan first year	Wage first year	Duncan third year	Wage third year	Duncan first year	Wage first year	Duncan third year	Wage third year
% weeks worked more than 20 hours/week	-1.718 (-.040)	23.93 (.073)	39.80** (.848)	255.06* (.645)	-2.780 (-.058)	42.77 (.134)	-14.73 (-.326)	22.53 (.064)
% weeks worked 1-20 hours/week	.173 (.004)	51.84 (.149)	29.04* (.594)	138.00 (.335)	-.048 (-.001)	-.471 (-.001)	-6.195 (-.122)	56.44 (.140)
Dropout	-10.17 (-.203)	-6.099 (-.014)	-43.91* (-.553)	-109.36 (-.164)	-4.994 (-.081)	-49.01 (-.121)	-4.185 (-.073)	50.88 (.119)
Both parents present	.211 (.006)	-43.97 (-.147)	4.055 (.103)	55.40 (.161)	3.696 (.067)	40.35 (.111)	13.11* (.311)	42.76 (.135)
Head's education	-.331 (-.071)	-6.473 (-.177)	-.200 (-.034)	8.948 (.176)	.082 (.012)	-.302 (-.006)	-.240 (-.044)	12.87 (.259)
Marital status	-2.702 (-.052)	-23.51 (-.059)	11.93 (.294)	11.54 (.034)	3.881 (.067)	-4.657 (-.012)	6.932 (.191)	-13.41 (-.047)
Number of children	.622 (.015)	-36.12 (-.112)	1.503 (.052)	14.76 (.060)	5.299 (.061)	-42.77 (-.071)	2.952 (.067)	-123.48* (-.360)
Weeks since date last enrolled	.062 (.046)	-.060 (-.006)	.077 (.143)	.552 (.115)	.022 (.014)	2.546** (.255)	-.065 (-.113)	.786 (.181)
Hispanic	2.671 (.077)	24.02 (.088)	10.55 (.288)	201.87** (.639)	-	-	-	-
Duncan, last job in school	.375** (.378)	-	.127 (.120)	-	.456** (.437)	-	-.005 (-.005)	-
Wage, last job in school	-	.419** (.443)	-	-.071 (-.071)	-	.096 (.105)	-	.281 (.244)

Table 1.15 (continued)

	Dependent variables							
	Minority				White			
	Duncan first year	Wage first year	Duncan third year	Wage third year	Duncan first year	Wage first year	Duncan third year	Wage third year
Constant	26.00	316.93	-12.91	27.31	16.41	216.02	42.30	63.62
R^2	.241	.196	.377	.480	.209	.129	.169	.257
N	92	89	36	34	231	214	68	61

NOTE: Numbers are metric coefficients with standardized values in parentheses. See Table 1.7 for brief variable descriptions. The '% weeks worked' variables are measured as of the respondent's last year in high school.

*Significant at the .05 level.
**Significant at the .01 level.

Table 1.16 Regression Analysis of Effects of Characteristics of High School Jobs on Post-School Work Experience of Non-College Males with Some High School Work Experience, by Minority Status

	Dependent variables							
	Minority				White			
	Duncan first year	Wage first year	Duncan third year	Wage third year	Duncan first year	Wage first year	Duncan third year	Wage third year
% weeks worked more than 20 hours/week	.808 (.022)	-40.67 (-.074)	-9.360 (-.214)	256.76 (.160)	5.289 (.135)	52.52 (.076)	-4.080 (-.100)	-125.20 (-.135)
% weeks worked 1-20 hours/week	-3.739 (-.091)	-12.80 (-.022)	-3.909 (-.081)	16.81 (.009)	7.269 (.170)	51.34 (.068)	-1.664 (-.035)	-187.73 (-.167)
Dropout	-3.836 (-.125)	-44.64 (-.097	7.850 (.231)	342.93 (.269)	1.151 (.032)	-66.71 (-.101)	-1.064 (-.028)	-25.15 (-.027)
Both parents present	4.502 (.143)	66.98 (.148)	11.13 (.237)	648.56 (.369)	.806 (.019)	28.46 (.039)	-5.867 (-.107)	182.84 (.120)
Head's education	.045 (.013)	4.687 (.088)	-.096 (-.024)	-3.752 (-.026)	.282 (.052)	-4.416 (-.048)	.879 (.158)	23.78 (.163)
Marital status	-1.975 (-.039)	49.71 (.069)	-.205 (-.005)	-91.73 (-.066)	1.848 (.033)	240.13** (.244)	5.967 (.177)	186.65 (.247)
Number of children	-2.850 (-.071)	85.98 (.146)	3.414 (.107)	-102.34 (-.089)	-2.210 (-.028)	75.46 (.052)	-6.112 (-.211)	-42.63 (-.068)
Weeks since date last enrolled	.138 (.121)	.813 (.048)	-.006 (-.010)	-.973 (-.047)	.024 (.019)	-1.290 (-.056)	.014 (.026)	1.066 (.092)
Hispanic	-1.106 (-.038)	32.06 (.075)	-1.248 (-.039)	-250.41 (-.211)	-	-	-	-
Duncan, last job in school	.252** (.235)	-	.602* (.367)	-	.453** (.382)	-	.164 (.124)	-
Wage, last job in school	-	.342** (.242)	-	1.087 (.269)	-	.427** (.300)	-	.368 (.209)

Table 1.16 (continued)

	Dependent variables							
	Minority				White			
	Duncan first year	Wage first year	Duncan third year	Wage third year	Duncan first year	Wage first year	Duncan third year	Wage third year
Constant	10.00	227.10	9.96	-203.37	4.04	361.15	15.85	-24.19
R^2	.126	.151	.253	.227	.181	.196	.100	.147
N	139	143	44	39	248	241	90	77

NOTE: Numbers are metric coefficients with standardized values in parentheses. See Table 1.7 for brief variable descriptions. The '% weeks worked' variables are measured as of the respondent's last year in high school.

*Significant at the .05 level.
**Significant at the .01 level.

the short-run school year employment helps youth forge job contacts or acquire work skills or habits that are valuable in direct proportion to the quality of school year jobs held.

Matters are less clearcut when year three outcomes are examined. Due to extremely small sample sizes for these outcomes, inferences from these results are very hazardous. Nonetheless, the very consistent pattern of effects of Duncan SEI and hourly wage of school jobs on year one outcomes breaks down completely when year three outcomes are examined. This suggests that the quality of school year jobs held matters little over the longer term, as youth put the school-to-work transition behind them and become more firmly established in the labor market. Given the simultaneous lack of consistent effects of either of the work intensity variables, one is tempted to conclude that the modest effects on year three outcomes uncovered when the whole sample was examined (Tables 1.13 and 1.14) were primarily driven by the advantages of having had some high school work experience relative to having had none at all.

VI. SUMMARY AND CONCLUSIONS

The first section of this paper documented the rather extensive work involvement of high school youth. The second section then attempted to evaluate the consequences of this employment for subsequent educational and labor market outcomes.

Educational Outcomes

Results showed generally only neutral or benign effects of high school employment on educational outcomes. Such work did cut into the study time of white males and the leisure time at school of white males and minority females. But these effects appeared only for the higher level of work intensity and were generally fairly modest in size. Moreover, whatever social integration occurs from leisure time school involvement can perhaps occur for employed students at their work setting. In any event, neither decreased study time nor the diffused involvement and motivation of employed students has any deleterious consequences for academic standing; neither work intensity measure has any significant effect on relative class rank for any race/sex group. Nor does work in high school retard the high school educational progress of any race/sex group, net of initial educational expectations and other appropriate controls. Indeed, high school employment is actually associated with increased probability of completing high school for all four groups. Whites who work at the higher intensity level while in high school do seem less likely to attend college, but the implications of this finding from a policy standpoint are not clearcut.

Labor Market Outcomes: Effects for Non-College Goers

There can be no doubt of the striking effects of high school employment in easing the school-to-work transition. The more weeks worked while in the last year of high school, and the more hours worked per week, the fewer weeks of unemployment experienced in the first year after leaving school, and the fewer weeks of unemployment experienced before finding a post-high school job. The coefficients representing these effects are large and significant for all race/sex groups. Part of the reason for this reduced unemployment may be that youth acquire valuable work skills or become aware of job opportunities in their high school employment stints. This is suggested by the considerable number of working students who find post-school jobs with the same employer or in the same 1-digit occupation or industry category as their school year job.

Working students also generally appear to find more remunerative and/or higher prestige jobs upon completing school. Specifically, work intensity is associated with higher Duncan SEI scores for white males and higher Duncan scores and higher hourly wage rates for minority and white females in the first survey after leaving school. Moreover, these effects are in evidence even several years after leaving school; in the third survey after leaving school, work involvement is associated with higher wges for minority groups of both sexes as well as for white males.

Restricting the analysis to working students permits a closer look at the way these effects are exerted. Specifically, when Duncan score and hourly wage of high school jobs are included as regressors in equations for, respectively, Duncan score and hourly wage of the job held in the first survey after leaving school, effects of the work intensity measures lose significance. This finding suggests that at least in the short run the quality of high school jobs, rather than work intensity per se, matters most for immediate post-school labor market success.

Implications

Whenever so many outcomes are examined in a single chapter, the treatment of any single issue must necessarily be cursory. This means that complications in analysis and complexities of the processes examined, which presented themselves throughout this paper, were inevitably given short schift. This paper aimed at breadth rather than depth of presentation. The objective was to present an overview and raise a series of issues which, despite their importance, have heretofore been rather neglected in the literature. As such, our conclusions should of necessity be general rather than specific.

Taken as a whole, then, the results of these analyses suggest the very valuable role that high school employment can play. While this paper has not attempted to isolate the mechanisms by which high school employment exerts its impact, working while in high school seems nonetheless to carry a substantial advantage in improving the school-to-work transition. Of equal importance, it does so virtually without interfering in either academic achievement or educational progress.

These results suggest that the practical experiences students gain in work settings may be of substantial value. Policies aimed at improving the post-school labor market experiences of disadvantaged youth might reflect this fact. Cooperative vocational education or work-study programs may make a substantial contribution, for example. Similarly, vocational counselors might spend greater efforts at placing or counseling students in their choice of school year work activities. These efforts are not advocated as substitutes for improving the academic standards especially of minority American education. Rather, improved scholastic credentials jointly with well placed and timely work experience can be valuable aids in improving the post-school experiences of American youth.

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CHAPTER 2

A LONGITUDINAL STUDY OF RESERVATION WAGES, DURATION OF JOB SEARCH, AND SUBSEQUENT WAGES: AN EMPIRICAL ECONOMETRIC ANALYSIS

by Choongsoo Kim*

A longstanding concern of labor economics has been to determine why some individuals have higher probabilities of unemployment than others. The importance of understanding the causes and consequences of unemployment is widely acknowledged, but the discussions usually arise from one of two different points of view. One point of view focuses on the consequences of unemployment: unemployment time incurs indirect costs, such as loss of on-the-job or occupational training opportunities, as well as direct costs in terms of earnings losses. The other position holds that unemployment reflects a rational individual's decision-making process and is an activity that is necessary to improve the job matching process, given the fact that the individual has incomplete information. This view is useful in explaining a high labor market turnover pattern among individuals who have less labor market experience.

Basically, two different facets of unemployment have been analyzed--its incidence and its length. Although we attempt to explain both facets in this analysis, we pay particular attention to the relationship between the length of the job search period and post-unemployment wages.

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Past studies of unemployment duration, whose theoretical foundations were generally formulated within the framework of job search theory, can be broadly classified into two categories. One category includes studies that investigate the interrelationships among reservation wage, unemployment duration, and reemployment probability (for example, Sant, 1977; Kahn, 1978; Kiefer and Neumann, 1979b and 1981; Lancaster, 1979; and Lancaster and Nickel, 1980. The key concerns of these studies are how reservation wages are formed conditional upon the known distribution of the wage offer function, and whether or not reservation wages decline as the search period increases.[1] Studies in the other category focus on the effect of unemployment insurance (or government support in general) on the length of the search period and the relationship between the length of the search period and subsequent wage gains (for example, Ehrenberg and Oaxaca, 1976; Keeley and Robins, 1982).

Three kinds of drawbacks affect the empirical implementation in the previous studies. First, the reservation wages of unemployed persons are assumed to be unknown or unavailable for analyses; in these studies, equations were solved to infer reservation wages by applying the condition that employment commences when searchers accept jobs whose offered wages are equal to or greater than the reservation wages (Kiefer and Neumann, 1979a). Second, common measures of unemployment duration are inaccurate in that they represent an incomplete spell of unemployment since data were generally gathered from a survey at a given point in time (Sant, 1977). Thus, empirical findings based upon these estimates of unemployment duration may be biased if the duration of the unemployment spell is not symmetrically distributed. In fact, some recent studies (for example, Parnes, 1982) show that long unemployment periods are concentrated only among a small group of individuals; this finding, to a certain extent, refutes the notion of a random distribution of unemployment duration. Third, the wage rate reported as of the immediately following survey is frequently used as the post-unemployment wage (Ehrenberg and Oaxaca, 1976; Kahn, 1978). Undoubtedly, this approach is inappropriate not only because this measure of the post-unemployment wage rate could differ substantially from the wage rate of the first job after the incidence of unemployment, but also because it excludes those sample members who were not working as of the survey date following the unemployment spell.

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[1] An extensive literature review on job search theory is found in Lippman and McCall (1976). Regarding reservation wage formation, DeGroot (1968) and Rothschild (1974) demonstrated that similar inferences could be made between the assumptions of known and unknown distributions for the wage offer function by assuming optimal job search behavior.

Our analysis overcomes most of these difficulties. Using a recent longitudinal data set, our analysis selects a group of individuals who were unemployed at the initial survey time and traces their subsequent labor market activities. Since information is gathered from each individual's employment history, we are able to identify the wage rate of the first job following the unemployment period and the exact length of the period between the time an unemployed person began searching for a job and the time he or she subsequently found a job. Information about reservation wages as of the initial survey time is also collected and used to examine the determinants of subsequent wages. We also take into account a statistical issue that emerges when initially selecting a sample of unemployed individuals. As Salant (1977) pointed out, a person unemployed for a longer duration has a higher probability of being selected into the sample of the unemployed than one with a shorter period of unemployment. Thus, we apply a methodology developed by Heckman (1976) to account for this selectivity issue.

In section I of this chapter, we discuss some important theoretical and statistical issues concerning the duration of the job search period and the consequences of job search activity. Data and variable explanations appear in section II. Empirical results are analyzed in the next two sections: in section III, the characteristics of those individuals unemployed as of the initial survey time and those who subsequently found employment are discussed, and in section IV, the relationship between the length of the search period and subsequent wage gains is investigated. A summary of findings is contained in the final section.

I. BASIC CONSIDERATIONS: THEORETICAL AND STATISTICAL ISSUES

In the simplest version of job search models, searchers are assumed to maximize the present discounted value of expected wealth subject to the condition that the acceptable wage offer is not lower than the reservation wage. Although this assumption is contained in most job search analyses, different implications are derived depending upon what assumptions are made about job search costs and the time horizon. That is, since job search activities are not costless, the longer a person searches, the smaller are net expected returns; this inference is particularly true if a finite time horizon is also assumed. In fact, the empirical relevance of the inferences regarding the constant versus declining reservation wage hypotheses has been tested in many previous job search studies (for example, Kiefer and Neumann, 1979a; Kahn, 1978).

Similarly, two distinct inferences about the relationship between the length of the search period and subsequent wages are predicted depending upon the assumption of a recall probability. If previous job offers can be retained, then a non-decreasing relationship would be found (Lippman and

McCall, 1976); however, if previous job offers cannot be retained, then a negative relationship would be expected (Salop, 1973).[2] Moreover, if the unemployment period is regarded as a productive investment period for better job matching, as most job search analysts argue (see, Alchian, 1970), then we would even expect to observe a positive relationship between length of search and subsequent wage rate.

The reservation wage equation is specified to have the following form:

(1) $w^r = f(F(w), c, r, Z_1)$

where w^r is the reservation wage, $F(w)$ represents the wage offer distribution, c and r denote, respectively, search cost and the subjective discount rate, and Z_1 is a vector of individual characteristics. Job search cost, c, is generally unmeasurable, and the best estimate for it is duration of the job search period; indeed, the direct costs of job search and the indirect costs such as foregone earnings and psychic costs should be very highly correlated with the length of search. The distribution function F(w) is assumed to be known to searchers. In empirical estimations, it is further assumed that the distribution function can be sufficiently characterized by the first and second moment. In an infinite time horizon model, the discount rate, r, becomes somewhat less important. On the other hand, even in a finite time horizon model, r has generally been dropped in empirical specifications due to lack of information (see, for example, Franz, 1980).

The major difficulty in estimating equation (1) is that w^r and c (or duration, D) are jointly determined. In other words, while the reservation wage may vary depending upon the length of search, the search period may also be affected by the reservation wage: the underlying logic for the latter relationship is that searchers who ask too high a reservation wage may have to search longer. Therefore, we now have the following two equation system:

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[2] The expected negative relationship can be explained from both demand and supply side aspects: searchers may accept lower wage offers as the search period increases due to increasing search costs; on the other hand, employers may view a longer nonemployment period as an indicator of undesirable (perhaps, unobservable) individual characteristics and thus may offer lower wages.

(2) $w^r = f_{w^r}(F(w), D, r, Z_1)$

(3) $D = f_D(w^r, X_1)$

where X_1 is a set of other explanatory variables.

Let $g(Z, w)$ denote the probability of receiving a job offer. The probability of a searcher receiving and accepting a job offer then is,

(4) $p(Z, w^r) = \int_{w^r}^{\infty} g(Z, w)\, f(w)\, dw$

and the expected subsequent wage can be expressed as a conditional mean,

(5) $E(w|w > w^r) = \int_{w^r}^{\infty} w\, g(Z, w)\, f(w)\, dw | p(Z, w^r)$

By following the reasoning used to extend equation (1) into equations (2) and (3), we can incorporate the duration of the search period into equation (5). Writing $p(Z, w^r)$ on a continuous time domain as $p(t)dt$, $t > 0$ at $w^r(t)$ (see Lancaster, 1979), and integrating results in duration of job search, we have

(6) $w^s = f_{w^s}(w^r, F(w), D^s, Z_2)$

(7) $D^s = f_{D^s}(w^s, X_2)$

where superscript s stands for "subsequent" and Z_2 and X_2 are sets of explanatory variables.

The issue of sample censoring arises when empirically estimating the above equations: for example, accepted (post-unemployment) wages are observed only among those who subsequently found jobs. Indeed, this sample censoring problem also emerges in selecting an original sample of unemployed youths. In this study, we employ the methodology developed initially by Heckman (1976) and later extended to account for the double-selectivity issue by Behrman, Wolfe, and Tunali (1980), among others. Formally,

(8) $q_1^* = a_1^{*'} X_1 + e_1^{*'}$

(9) $q_2^* = a_2^{*'} X_2 + e_2^{*'}$

(10) $q_3 = a_3' X_3 + k_3 e_3'$

where q_1^* and q_2^* are, respectively, unobserved probabilities of being unemployed at a given point in time, and subsequently finding a job; $a_j^{(*)'}$ and X_j (j=1,2,3) represent, respectively, vectors of coefficients and right-hand-side variables; k_3 is a scale parameter; and $e_j^{(*)'}$ are assumed to have zero mean and the following covariance matrix (with u representing a correlation coefficient of residual terms)

$$\Sigma = \begin{bmatrix} 1 & u & u_{13} \\ u & 1 & u_{23} \\ u_{13} & u_{23} & 1 \end{bmatrix}.$$

While q_1^* and q_2^* are not observed, q_1 and q_2 are observed with the following sample selection process:

(11) $q_1=1$ if $q_1^* > 0$; $=0$ if $q_1^* < =0$

(12) $q_2=1$ if $q_1=1$ and $q_2^*>0$; $=0$ if $q_1=1$ and $q_2^* < =0$; unobserved if $y_1=0$

(13) q_3 is observed if and only if $q_2=1$

Thus, the expected value of q_3 conditional upon $q_2=1$ can be written as:

(14) $E(q_3 | q_2=1) = a_3'X_3 + k_3E(e_3 | q_1^* > 0, q_2^* > 0)$

Behrman, Wolfe, and Tunali (1980) demonstrated that when the two sample selection rules are independent of each other, equation (14) can be expressed as follows with the assumption that the joint density of e_1^*, e_2^*, and e_3 is trivariate normal:

(15) $q_3 = k_3' + k_3 u_{13} \lambda_1 + k_3 u_{23} \lambda_2 + v_3$,

(16) where $\lambda_j = f(a_j'X_j)/(1-F(a_j'X_j))$, j=1,2,

where f(.) and F(.) represent, respectively, the density and distribution function of the standard normal distribution, and λ is the inverse of Mill's ratio which can be computed from probit estimations for equations (8) and (9).

In empirical estimations, the estimates of the λs enter into equations (2), (3), (6), and (7). Thus, our model is specified as follows:

(17) $y_1 = f_1(y_2, y_3, y_4, X_1, \lambda_1, \lambda_2)$

(18) $y_2 = f_2(y_1, y_4, X_2, \lambda_1, \lambda_2)$

(19) $y_3 = f_3(y_4, X_3, \lambda_1)$

(20) $y_4 = f_4(y_3, X_4, \lambda_1)$

where y_1, y_2, y_3, y_4 are, respectively, subsequent wages, subsequent duration, reservation wages as of the initial survey time, and unemployment duration as of the initial survey time; λ_1 and λ_2 are estimates from probit equations (8) and (9), respectively; and X_i $(i=1,2,3,4)$ are vectors of other explanatory variables. By examining the identification problem in estimating system estimators, we employ the three-stage-least-squares (3SLS) method.

II. DATA AND VARIABLES

The data for this analysis are obtained from the 1979, 1980, and 1981 Youth Cohort of the National Longitudinal Surveys of Labor Market Experience (NLS). The nationally representative NLS gathers information about individual, labor market, and environmental characteristics of 12,686 men and women who were 14 to 21 years old as of January 1, 1979 (Center for Human Resource Research, 1982). Unemployed males and females age 18 to 21 as of the 1979 interview date who were subsequently interviewed in 1980 and 1981 constitute the sample of this analysis.[3] By tracing each individual's employment history over time, we identify the wage rate of the first job (SWAGE; y_1) the individual found subsequent to the 1979 unemployment spell as well as the length of time between the 1979 interview date and the date the person subsequently found employment (SDUR; y_2). Two other dependent variables of the analysis are RWAGE (y_3) and UDUR (y_4), the reservation wage and the unemployment duration as of the 1979 survey week, respectively.

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[3] In order to simplify the analysis by minimizing the role of interaction effects between schooling and labor market activities in job search behavior, particularly among high school students, youths under age 18 were not included in this analysis.

The original sample of those unemployed in 1979 includes 332 males (representing 796,000 persons) and 413 females (representing 992,000 persons).[4] Of these, 296 males and 311 females reported that they subsequently found employment by the 1980 or 1981 interview dates. However, to be included in the analysis of subsequent wage determination, each individual had to report the subsequent wage, the date he or she found the first post-unemployment job, the reservation wage and unemployment duration as of the 1979 interview date. In addition, only those individuals reporting reasonable values for the variables used in the analysis are included.[5] The first condition, reporting subsequent wages, turned out to be especially restrictive because the NLS does not gather information about the wage rates of "part-time jobs" (defined as jobs at which the individual worked for less than 20 hours a week and/or for less than 9 weeks) unless the respondents were still working on the jobs during the survey week. These restrictions limit our final sample to 214 males and 241 females.

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[4] The NLS is a nationally representative survey; thus, each individual is assigned a sampling weight, the inverse of the probability of being selected. In this paper, descriptive statistics such as means and standard deviations represent the population estimates where each response is weighted by the respondent's sampling weight. On the other hand, sampling weights are not introduced in equation estimations. The issue as to whether or not survey sampling weights should be used in multivariate analyses is not yet resolved in the literature of statistics. For some interesting discussions about the issues of using sampling weights in regression analyses, see Manski and Lerman (1977), DeMouchel and Duncan (1980), and Fienberg and Picard (1980).

[5] We excluded individuals whose hourly reservation wages in 1979 were less than \$.050 or greater than \$20.00 and those whose subsequent wages on an hourly basis were less than \$.050 or greater than \$25.00.

The following independent variables are used: AGE = age; EDUC = years of schooling; AFQT = the Armed Forces Qualifying Test score (0-105); KOWW = a knowledge of the world of work test score (0-9); UR = the race-sex specific state unemployment rate; SOUTH = 1 if the respondent (R) resides in the South; SMSA = 1 if R lives in an SMSA; MILITARY = 1 if R ever served in the active armed services; HIGH SCHOOL = 1 if R is enrolled in high school; FT-COLL = 1 if R is enrolled in college full time; MARRIED = 1 if R is married; LIPH = 1 if R is living in a parent's house; BLACK = 1 if R is black; HISPANIC = 1 if R is Hispanic; LAYOFF = 1 if the unemployment incidence of R is due to layoff; UI = 1 if R receives unemployment insurance; PREWORK = 1 if R has previously worked between January 1, 1978 and the 1979 interview date; PREWAGE = 1 if PREWORK = 1 and R reported the wage rate of the previous job; and W-MEAN and W-SD = sex-specific mean and standard deviation of the wages, respectively, that employed youths age 18 to 21 earn in the (one-digit) occupation where the (unemployed) R desires to work. These variables basically represent the characteristics of individuals as of the 1979 interview dates although the information on AFQT and UI is obtained from 1980 surveys.

Because we expect the labor market behavior patterns to differ between males and females, we estimate separate equations for each sex; however, due to the small number of sample cases, separate estimations for each race/ethinic group were not attempted.

III. UNEMPLOYMENT AND SUCCESSFUL JOB SEARCH

In this section, we compare the characteristics, first, of those unemployed in 1979 with their counterparts who were employed and, second, of the unemployed who subsequently found a job with those who did not find a job. Probit estimates for equations (8) and (9) are used as the statistical basis of analysis.

Probability of Being Unemployed

Empirically, equation (8) is specified as follows (with the expected signs on the coefficients in parentheses):

$$(8)' \quad \text{prob}(q_1=1) = f_{q_1}(\underset{(-)}{\text{AGE}}, \underset{(-)}{\text{EDUC}}, \underset{(-)}{\text{AFQT}}, \underset{(-)}{\text{KOWW}}, \underset{(?)}{\text{SOUTH}}, \underset{(?)}{\text{SMSA}}, \underset{(+)}{\text{MILITARY}}, \\ \underset{(+)}{\text{HIGH SCHOOL}}, \underset{(+)}{\text{FT-COLL}}, \underset{(?)}{\text{MARRIED}}, \underset{(+)}{\text{LIPH}}, \underset{(?)}{\text{BLACK}}, \underset{(?)}{\text{HISPANIC}})$$

In equation (8)', unemployed persons have a value of 1 and those employed as of the 1979 interview date have a value of 0 for the dependent variable.[6] The estimated equations appear in Table 2.1 and the means and standard deviations of each variable are presented in Appendix Table 2.1. The main concern here is to examine the observed systematic differences between unemployed and employed persons.

We find four variables which are significant for both sexes: the unemployment probability is inversely associated with the number of years of schooling and living in the South but positively correlated with veteran status and being a black. For the case of males, those who are enrolled in

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[6] We chose as a reference group employed persons rather than not-unemployed (including those who are not in the labor force) persons. Clark and Summers (1982) claimed that the distinction between unemployment and not-in-the-labor-force (NILF) status among youths is behaviorally meaningless. However, Flinn and Heckman (1983) demonstrated that the two states are clearly different, particularly in terms of probabilities of receiving a job offer; the probability is higher for those in the unemployment state than those in the NILF state. In fact, this contradictory finding appears to stem from the heterogeneous composition of the NILF group: for example, discouraged workers may have higher probabilities of transit between the two states, while the true NILF group such as full time students may have very low transition probabilities. Because of the difficulty in differentiating the NILF group into these two components, we did not include the NILF group in the reference group.

Table 2.1 Probit Estimates for the Probability of Being Unemployed Among 18 to 21 Year Olds Who are in the Labor Force, by Sex: 1979

	Males		Females	
Variables	Coefficients	t-stat[a]	Coefficients	t-stat[a]
Constant	0.0782	0.11	2.3189	3.36**
AGE	-0.0011	-0.03	-0.0445	-1.25
EDUC	-0.0973	-3.52**	-0.1231	-4.22**
AFQT	-0.0010	-0.42	-0.0093	-3.63**
KOWW	-0.0336	-1.59	-0.0284	-1.34
SOUTH	-0.1829	-2.21*	-0.1477	-1.85^{+}
SMSA	0.1242	1.49	-0.2392	-3.02**
MILITARY	0.3547	2.23*	0.0900	3.64**
HIGH SCHOOL	0.0612	0.54	-0.0572	-0.45
FT-COLL	0.2356	2.01*	0.1127	1.08
MARRIED	-0.1193	-0.80	0.1331	1.25
LIPH	0.2327	2.37*	0.0446	0.52
BLACK	0.4726	4.83**	0.5171	5.32**
HISPANIC	-0.0200	-0.18	-0.0686	-0.60
-2 * log likelihood ratio	103.47		211.03	
N, sample size	1809		1839	

[a] Asymptotic t-statistics.

**Significant at the 0.01 significance level, one tailed test.
* Significant at the 0.025 significance level, one tailed test.
$^{+}$ Significant at the 0.05 significance level, one tailed test.

college full time and those who live with their parents have higher probabilities of being unemployed than their respective counterparts. Among females, the unemployment probability is inversely related to the AFQT score; those who live in an SMSA have lower probabilities of being unemployed, compared to those who live in a non-SMSA.

Probability of Finding a Job Among Those Who Were Unemployed in 1979

The empirical specification of equation (9), similar to equation (8)', is shown below with the expected signs on the coefficients denoted in parentheses.

$$\text{(9)'}\quad \text{prob}(q_2=1) = f_{q_2}(\underset{(+)}{\text{AGE}}, \underset{(+)}{\text{EDUC}}, \underset{(+)}{\text{AFQT}}, \underset{(+)}{\text{KOWW}}, \underset{(-)}{\text{UR}}, \underset{(?)}{\text{SOUTH}}, \underset{(?)}{\text{SMSA}}, \underset{(?)}{\text{MILITARY}},$$
$$\underset{(?)}{\text{HIGH SCHOOL}}, \underset{(?)}{\text{FT-COLL}}, \underset{(+)}{\text{MARRIED}}, \underset{(-)}{\text{LIPH}}, \underset{(?)}{\text{BLACK}}, \underset{(?)}{\text{HISPANIC}}, \underset{(?)}{\text{LAYOFF}}, \underset{(?)}{\text{UI}}, \underset{(+)}{\text{PREWORK}})$$

In equation (9)', individuals who were unemployed in 1979 but subsequently found a job (by the 1981 interview date) have a value of 1 and those who did not find a job have a value of 0 for the dependent variable. The estimated results are shown in Table 2.2. Appendix Table 2A.2 compares the individual attributes of those who subsequently found a job and those who did not.

About 90 percent of males and nearly 80 percent of females eventually found a job (Appendix Table 2A.2). As revealed in Table 2.2, we are not successful in differentiating individual characteristics between those who found a job and those who did not, particularly among males. That is, for the case of males, neither general individual attributes such as the variables included in equation (8)' nor the newly added variables, the unique features of the unemployed such as LAYOFF, UI, and PREWORK (capturing the labor market

Table 2.2 Probit Estimates for the Probability of Finding a Job Among 18 to 21 Year Olds Who were Unemployed in 1979, by Sex

Variables	Males		Females	
	Coefficients	t-stat[a]	Coefficients	t-stat[a]
Constant	1.4893	0.72	-1.8510	-1.27
AGE	-0.0624	-0.59	0.0186	0.26
EDUC	0.1062	1.25	0.1357	2.22*
AFQT	0.0043	0.62	0.0058	1.03
KOWW	-0.0380	-0.62	.0685	1.65⁺
UR	-0.0312	-0.60	-0.0011	-0.03
SOUTH	0.1682	0.55	0.2930	1.67⁺
SMSA	-0.0338	-0.13	0.0920	0.54
MILITARY	0.6278	1.18	0.3921	0.67
HIGH SCHOOL	0.4353	1.38	0.2375	0.94
FT-COLL	0.3065	0.74	0.0672	0.25
MARRIED	3.4734	0.12	-0.0750	-0.33
LIPH	-0.4964	-1.34	0.0262	0.14
BLACK	0.2130	0.49	-0.6406	-2.15*
HISPANIC	0.6721	1.40	-0.0351	-0.12
LAYOFF	0.6279	1.29	0.1024	0.18
UI	0.2142	0.41	0.3067	0.71
PREWORK	0.0205	0.10	0.2214	1.29
-2 * log likelihood ratio	25.42		60.43	
N, sample size	319		401	

[a] Asymptotic t-statistics.

*Significant at the 0.025 significance level, one-tailed test.
⁺Significant at the 0.05 significance level, one-tailed test.

reentrant status) yield statistically significant coefficients.[7]

Among females, however, those who found a job are, as compared to those who did not find a job, more likely to have attained more years of schooling, to be more knowledgeable about the labor market (as measured by KOWW), and to live in the South than in the non-South, other things being equal. Black females are less likely to find a job than other females.

In sum, the individual characteristics of the unemployed generally follow the expected pattern; in particular, as compared to their employed counterparts, unemployed persons were less educated. Being a black or a veteran also increased the probability of being unemployed and living in the South decreased the probability. On the other hand, a majority of individuals unemployed in 1979 subsequently found a job by the 1981 interview date. Somewhat surprisingly, we do not find statistically significant characteristic differences between those who found a job and those who did not find a job among males. Therefore, we conclude that for unemployed youths age 18 to 21, the focus of youth unemployment analysis should be directed toward the consequential wage gains accruing to job search activities, not towards the probability of reemployment, perhaps due to the availability of alternative activities such as schooling or occupational training.

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[7] The finding of no significant characteristic differences between those who found a job and those who did not find a job was somewhat embarrassing since it implies, given the model specification, job finding reflects a random behavior. Therefore, we examined the labor market activities as of the 1981 survey date for 36 males and 102 females who had not found a job subsequently. We found that during the 1981 interview date, 26 males and 26 females were looking for jobs; 8 males and 73 females were out of the labor force; and 2 males and 3 females were working (those who said they were working did not report their wage rates). Among those who were looking for jobs, the mean length of the job search period as of the 1981 interview week were only about 14 weeks for each sex, indicating that they had been out of the labor force for some time since the unemployment spell in 1979. Further, we also compared their mean reservation wages reported in 1979 and in 1981. For both sexes, the mean reservation wages were higher in 1981 than in 1979 ($4.18 vs. $3.80 for males; $3.57 vs. $3.01 for females). This result may imply that these youths do not necessarily represent those who were not employable.

IV. DURATION OF JOB SEARCH, RESERVATION WAGES, AND SUBSEQUENT WAGES

In this section, we discuss the empirical results of equations (17) to (20). Because the dependent variables in equations (17) to (20) are specified to be determined jointly, we apply the three-stage-least-squares estimation procedure (3SLS).[8]

Descriptive Statistics

The means and standard deviations of the four dependent variables are presented in Table 2.3. The mean values of SWAGE and RWAGE are higher for males than for females by about 25 percent; for both males and females, the mean value of SWAGE is about 20 percent higher than that of RWAGE: $4.73 vs. $3.93 for males, and $3.77 vs. $3.15 for females. On the average, males found a job about 6 months after the 1979 interview date (SDUR) while females averaged about 7 months. The mean length of job search as of the 1979 interview date (UDUR) was about the same for males and females (1.8 months).

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[8] We also experimented with the two-stage-least-squares (2SLS) and limited-information-maximum-likelihood (LIML) techniques, which are basically single equation estimators. The estimates from the 3SLS procedure, which are system estimators, are asymptotically more efficient than those from the 2SLS technique because the 3SLS technique uses information from a covariance matrix of the stochastic disturbance terms of the structual equations derived from the residuals of the 2SLS estimates; basically, the 3SLS method is a generalized least squares application of the 2SLS estimation method. Since asymptotic efficiency is achieved from 3SLS, we did not attempt the iterative 3SLS technique (Madansky, 1964). For a detailed explanation of this estimation procedure, see Klein (1974) and Intrilligator (1978).

Table 2.3 Means and Standard Deviations (in parentheses) for Subsequent Wages, Reservation Wages in 1979, and Durations of Search Period Among Total Unemployeds and Previously Employed, by Sex[a]

Variables	Males	Females
	Total unemployed	
SWAGE (in dollars)	4.73 (2.80)	3.77 (2.31)
RWAGE (in dollars)	3.93 (1.64)	3.15 (5.77)
SDUR (in months)	5.91 (4.95)	7.13 (5.85)
UDUR (in months)	1.76 (2.34)	1.83 (2.68)
Total (000s)	716	788
N, sample size	296	311
	Previously employed[c]	
SWAGE (in dollars)	4.86 (2.91)	3.68 (1.35)
RWAGE (in dollars)	4.06 (1.71)	3.19 (0.52)
PWAGE (in dollars)[b]	3.99 (2.12)	3.00 (1.12)
SDUR (in months)	5.54 (4.67)	6.53 (5.57)
UDUR (in months)	1.67 (2.01)	1.67 (1.83)
Total (000s)	595	580
N, sample size	241	222

[a] Means and standard deviations represent the population estimates where each response is weighted by the respondent's sampling weight.

[b] PWAGE = hourly wage rates of the most recent previous job.

[c] Previously employed are defined as those who had worked between January 1, 1978 and the 1979 interview date.

These results suggest that it took, on the average, a longer time (by about one month) for females to find a job than for males; however, for both sexes, job search activity yielded productive returns in terms of subsequent wage gains.

One key individual characteristic that we wanted to control throughout this analysis is an individual's previous labor market experience. Particularly for the youngest age group, persons searching for jobs consist of two groups: new entrants and persons previously employed. We suspect that there might exist unobserved characteristic differences between new entrants and those employed earlier with regard to job search methods and reservation wage formation processes; therefore, we use previously employed status as a proxy for possible characteristic differences.[9]

Over 80 percent of males and 70 percent of females are classified as previously employed. The bottom panel of Table 2.3 presents the corresponding means and standard deviations for them (i.e., PREWORK=1). Although the differences are not substantial, we find that for males, the means of SWAGE and RWAGE are higher than among all unemployed persons and, thus, than among new entrants; for females, the mean SWAGE is, on the other hand, lower among the previously employed.[10] The mean duration of job search is slightly shorter among previously employed than among all unemployed persons. The mean RWAGE is slightly higher than the mean wage of the most recent previous job for both males and females, implying that the unemployment behavior of these persons may be explained within the the framework of job search theory.

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[9] In this study, the previously employed are defined as those who have held a job between January 1, 1978 and the 1979 interview date.

[10] The mean values for new entrants can be easily computed from Table 2.3. The mean values of SWAGE for males and females among new entrants are $4.09 and $4.02, respectively.

Empirical Results

The empirical specifications of the four equations (17)-(20) are as follows:

(17)' $\text{SWAGE}(y_1) = h(\text{AGE, EDUC, AFQT, BLACK, HISPANIC}, \lambda_1, \lambda_2, \text{PREWORK}, y_2, y_3, y_4)$

(18)' $\text{SDUR}(y_2) = i(\text{HIGH-SCHOOL, FT-COLL, MARRIED, MILITARY, LIPH, BLACK, HISPANIC}, \lambda_1, \lambda_2, \text{UI, PREWORK}, y_1, y_4)$

(19)' $\text{RWAGE}(y_3) = j(\text{BLACK, HISPANIC}, \lambda_1, \text{PREWORK, W-MEAN, W-SD}, y_4)$

(20)' $\text{UDUR}(y_4) = k(\text{HIGH-SCHOOL, FT-COLL, UR, SOUTH, MILITARY, LIPH, BLACK, HISPANIC}, \lambda_1, \text{UI, PREWORK}, y_3)$

Because the dependent variables take only positive values, we estimated the equations by transforming the variables into a logarithmic form. Regarding the empirical specifications, several comments are in order. First, the SWAGE equation includes human capital variables such as EDUC and AFQT, following the conventional specification of the wage equation.[11] Second, the main concerns of the duration equations SDUR and UDUR are the factors for the cost of job search and the constraints on employment; thus, we introduce UI and LIPH, which lower job search costs, and enrollment status, which might restrict the choice of available jobs. Third, RWAGE is assumed to be mainly a function of the wage offer distribution; W-MEAN and W-SD are used as proxies for the first and second moment of the wage offer distribution.

Empirical Findings: Males

The 3SLS estimators for males are presented in Table 2.4. Although we treat all y_i (i=1,2,3,4) as endogenous variables in the model, due to the

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[11] Regional variables such as South and UR, and enrollment status variables are generally included as control variables in the wage equation. However, we did not include the variables in equation (17)' because the variables we use in this analysis refer to the location and enrollment status of respondents as of the 1979 interview date.

Table 2.4 Three-Stage-Least-Squares Estimates for SWAGE(Y_1), SDUR (Y_2), RWAGE (Y_3), and UDUR (Y_4): Males

(t-statistics in parentheses)

Variables	SWAGE	SDUR	RWAGE	UDUR
Constant	1.5970 (1.13)	-7.4599 (-2.05)	5.0694 (22.77)	4.1885 (0.96)
AGE	-0.0003 (-0.01)	-	-	-
EDUC	0.0137 (0.64)	-	-	-
AFQT	0.0003 (0.26)	-	-	-
HIGH SCHOOL	-	0.0176 (0.10)	-	-0.6036 (-2.88)
FT-COLL	-	-0.0615 (-0.29)	-	-0.4351 (-2.34)
MARRIED	-	0.0180 (0.07)	-	-
UR	-	-	-	0.0566 (1.77)
SOUTH	-	-	-	-0.1972 (-1.04)
MILITARY	-	-0.2324 (-0.79)	-	0.0953 (0.29)
LIPH	-	-0.0446 (-0.28)	-	0.1437 (0.70)
BLACK	-0.0907 (-0.83)	0.1526 (0.62)	0.0178 (0.35)	-0.1852 (-0.61)
HISPANIC	-0.1555 (-1.51)	0.3863 (1.45)	-0.0616 (-1.23)	-0.0844 (-0.32)
1	0.0401 (0.19)	-0.2454 (-0.48)	-0.0129 (-0.15)	0.3782 (0.84)
2	-0.5621 (-1.92)	1.1257 (1.25)	-	-
UI	-	0.0191 (0.09)	-	0.4961 (1.88)
PREWORK	0.0562 (0.63)	-0.3115 (-1.43)	0.1003 (2.12)	-0.1856 (-0.98)
W-MEAN	-	-	0.2480 (4.31)	-
W-SD	-	-	-0.1932 (-1.97)	-
SWAGE, Y_1	-	1.5656 (2.56)	-	-
SDUR, Y_2	0.3710 (3.77)	-	-	-
RWAGE, Y_3	0.6296 (2.58)	-	-	-0.7934 (-1.05)
UDUR, Y_4	0.1296 (1.41)	-0.3920 (-1.28)	0.0951 (2.06)	-

sequential timing of the determination process, y_3 and y_4 are solved first and then the estimated results enter the equations for y_1 and y_2. Therefore, we begin by discussing the results for y_3 and y_4.

Contrary to findings from previous studies (Kasper, 1967; Stephenson, 1976), we find a positive and significant relationship between UDUR and RWAGE. Our finding is somewhat surprising because a positive relationship indicates that unemployed youths increase their asking wages as the search period lengthens. This finding may simply reflect that during a short-run period (say, less than 2 months in our sample), job searchers revise their asking wages upward by updating their information about the wage offer distribution. However, although the positive relationship is significant, the impact of UDUR on RWAGE is not substantial. That is, the elasticity of RWAGE with respect to UDUR is rather small, 0.0951.[12] For example, at the mean value of UDUR (about 8 weeks in our sample), an increase in UDUR by one week would increase RWAGE by only about one percent (as computed by 12.5% * 0.0951), which is less than 4 cents.

The coefficient of the variables capturing the first and second moments of the wage offer distribution--W-MEAN and W-SD, respectively--turned out to be significant. The positive coefficient of W-MEAN is expected because individuals who expect to receive a higher wage offer are more likely to ask higher wages. Further, the magnitude of the coefficient, 0.2480, reveals that the RWAGE of an unemployed person is highly responsive to the expected wage offer. That is, at the mean value of W-MEAN, \$4.05, an increase in W-MEAN by one dollar or by 25 percent would increase RWAGE by 25 percent, which implies unitary elasticity.

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[12] Remember that the y_i are in logarithmic form; thus, the coefficient represents a constant elasticity. The small impact of UDUR on RWAGE is also found in a previous study. Stephenson (1976) reported that for each week of unemployment, male youth reduce their reservation wage by 0.014 percent. Since the mean value of reservation wage in his study was about $2.00, the result means that each additional week of unemployment reduces the reservation wage by merely 0.028 cents.

The negative sign on the coefficient of W-SD needs further clarification. Theoretically, the sign on the coefficient of W-SD, a_{SD}, is ambiguous. To illustrate, let w_0 denote a searcher's mean expected wage and f(w) represent the density function of the wage offer distribution. As shown in Figure 2.1, if a searcher has a reservation wage, RW_A, which is larger than w_0, then the reservation wage is presumed to be positively correlated with the variance of the wage offer distribution: the area under $f(w)_2$ is greater than that under $f(w)_1$ by the shaded area, A. On the other hand, if a searcher's reservation is RW_B, which is smaller than w_0, then the variance will negatively affect reservation wages: the area to the right of RW_B under $f(w)_2$ is smaller than that under $f(w)_1$ by the shaded area, B. As a result, the theoretical expectation is: if $RW > w_0$, then $a_{SD} > 0$; if $RW < w_0$, then $a_{SD} < 0$.[13]

Our empirical finding of a negative coefficient indirectly suggests that, on the average, the RWAGE of unemployed persons lies below W-MEAN.[14] This finding may be interpreted in a different way. In reality, high wage occupations such as professionals and craftsmen have higher wage variances than low wage occupations such as service workers. Thus, we can infer that, other things being equal (including W-MEAN), unemployed males desiring to work

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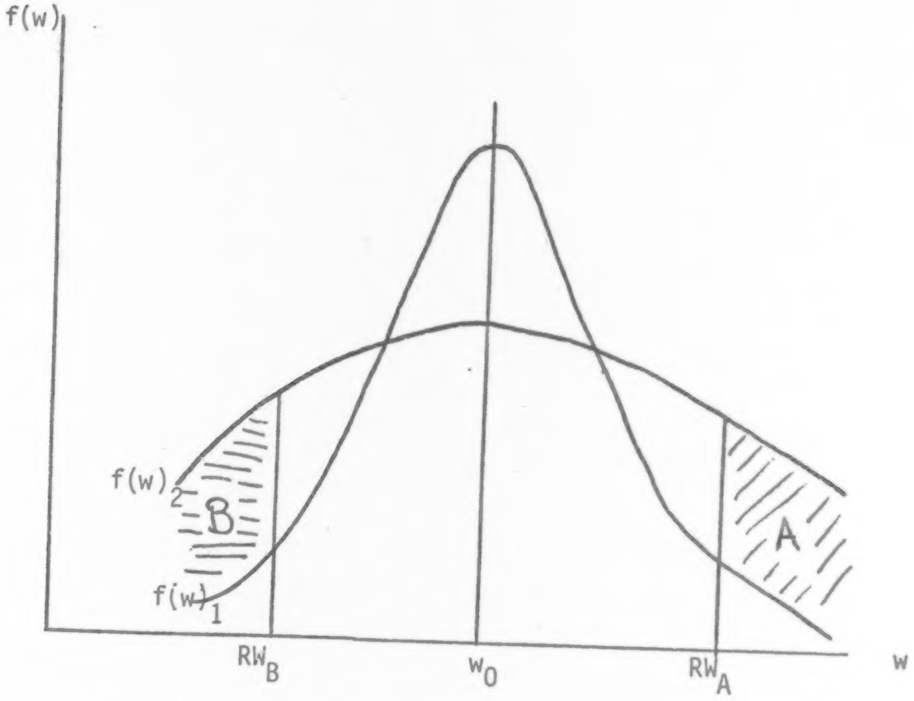
[13] In the case $RW=w_0$, the sign on a_{SD} is indeterminate. For a detailed discussion, see Rothschild (1974) and Franz(1980).

[14] We checked our finding with the actual data of our sample members. The mean values of RWAGE and W-MEAN are, respectively, \$3.58 and \$4.05, which are consistent with our empirical finding.

Figure 2.1 Reservation Wage and Variance of Wage Offer Distribution



in large wage variance occupations, thus high wage occupations, have relatively lower reservation wages.

The PREWORK variable also produced a positive and significant coefficient, indicating that RWAGE of unemployed youths who have previously worked is higher than that of new entrants by about 11 percent (as computed by exp(0.1003) - 1).

Somewhat unexpectedly, the coefficient of RWAGE in the UDUR equation was statistically insignificant. Our results also show that UDUR is positively associated with UI and UR. The positive coefficient of UI is consistent with the expected theoretical relationship. It has been generally known that receipt of unemployment insurance lowers the relative costs of non-market activities including job search costs, thus, prolonging job search activity, particularly in the short-run (Burdett, 1979). The results also reveal that the unemployment duration of enrolled youths is considerably shorter than that of non-enrolled youths.

As explained earlier, the main issue in the analysis of the relationship between SWAGE and SDUR is the empirical test of two different search models: a systematic search model without a recall probability (Salop, 1973) and a random search model with a recall probability (Lippman and McCall, 1976). A negative relationship is theoretically expected in the former model, while a nonnegative association is predicted for the latter model.

Our empirical findings turned out to be consistent with the random search model with a recall probability. The results demonstrate that as individuals search longer, the resulting wages would be higher, and vice versa.[15] This finding has a significant implication: search activities yield positive returns. Public attention has been focused on youth unemployment because unemployment has been thought to bring grave consequences such as a likelihood of recurrent unemployment and a reduction in life-time earnings. However, as long as job search behavior produces positive returns, job search could be regarded as an investment activity.

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[15] Kahn(1978), using data from the 1967 Survey of Economic Opportunity, found results that support the Salop(1973) model, a systematic search model without a recall probability. However, due to the substantially different specifications of the model, Kahn's findings and ours cannot be directly compared. It may well be that the systematic search model explains the job

This argument is, in fact, further strengthened by the finding of a positive relationship between RWAGE and SWAGE. Although we do not observe the reservation wage at the time the unemployed person eventually found a job, we can safely assume that the reservation wage at the time was close to SWAGE. Earlier, we reported that the mean of SWAGE was about 20 percent higher than the mean of RWAGE. These findings indeed negate the argument that youths are unemployed not because they do not receive acceptable job offers but because they do not receive job offers at all (Kahn, 1978).

Empirical Findings: Females

We find significantly different behavior patterns for females than for males (Table 2.5). Unlike for males, RWAGE and UDUR for females were not significantly associated. The nonsignificant relationship serves as supportive evidence for the constant reservation wage hypothesis. On the other hand, as in the case of males, RWAGE is significantly and positively affected by the expected wage offer and is significantly and negatively correlated with the variance of the wage offer distribution[16]; also, females

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search behavior of older workers, while the random search model describes the job search behavior of younger workers. On the other hand, Gera and Hasan (1982), using Canadian survey data, found supportive evidence for the Salop model among males and for the Lippman and McCall model among females.

[16] The mean values for RWAGE and W-MEAN among females are $3.18 and $3.50, respectively. These results are consistent with the negative coefficient of W-SD. The result among males is reported in footnote 14.

Table 2.5 Three-Stage-Least-Squares Estimates for SWAGE (Y_1), SDUR (Y_2), RWAGE (Y_3), and UDUR (Y_4): Females

(t-statistics in parentheses)

Variables	SWAGE	SDUR	RWAGE	UDUR
Constant	-0.5384 (-0.26)	2.2293 (0.62)	5.2918 (32.95)	-5.4935 (-1.01)
AGE	0.0161 (0.67)	-	-	-
EDUC	-0.0385 (-1.55)	-	-	-
AFQT	0.0029 (1.57)	-	-	-
HIGH SCHOOL	-	0.0961 (0.44)	-	-0.0424 (-0.24)
FT-COLL	-	0.0682 (0.31)	-	-0.0017 (-0.01)
MARRIED	-	-0.2080 (-1.10)	-	-
UR	-	-	-	0.0453 (1.57)
SOUTH	-	-	-	-0.1271 (-0.94)
MILITARY	-	-0.0360 (-0.06)	-	-0.4238 (-1.21)
LIPH	-	0.1147 (0.72)	-	-0.1655 (-1.34)
BLACK	-0.0101 (-0.11)	-0.2030 (-0.85)	0.0230 (0.66)	-0.0490 (-0.18)
HISPANIC	0.0993 (1.24)	0.0582 (0.27)	-0.0323 (-0.81)	-0.1469 (-0.64)
1	0.3337 (2.08)	0.1271 (0.19)	-0.0378 (-0.79)	-0.1407 (-0.59)
2	0.2465 (1.14)	0.5586 (0.63)	-	-
UI	-	0.1329 (0.37)	-	0.6087 (2.57)
PREWORK	-0.0752 (-0.99)	-0.4118 (-2.68)	-0.0069 (-0.23)	0.0938 (0.69)
W-MEAN	-	-	0.1759 (3.45)	-
W-SD	-	-	-0.0896 (-2.56)	-
SWAGE, Y_1	-	-0.1406 (-0.20)	-	-
SDUR, Y_2	-0.1781 (-1.39)	-	-	-
RWAGE, Y_3	1.0631 (2.76)	-	-	0.9578 (1.01)
UDUR, Y_4	0.1266 (1.11)	0.4161 (0.86)	0.0399 (0.73)	-

who receive unemployment insurance are more likely to search longer than those who do not.

Contrary to the case of males, the relationship between SWAGE and SDUR turned out to be negative although it was not statistically significant. The implication of this finding is that as the search period becomes longer, unemployed females tend to accept marginally lower wages. On the other hand, SWAGE is highly responsive to RWAGE: the elasticity of SWAGE with respect to RWAGE is about one.

It is not readily apparent from our study why the observed structural relationships among the four dependent variables differ between males and females. Frequently, the different patterns in labor market behavior between males and females, particularly among older workers, is attributed to the availability of alternative non-market activities of women--household activities (Johnson, 1983). Although we expected that the issue of alternative household activities would be less relevant in the analysis for a young age group like ours than for an older age group, it may well be that females who had alternative nonmarket activities had already left the labor market, and thus were not included in our sample; therefore, only those who did not have alternatives had to remain in the labor market and experienced adverse labor market consequences.

Alternative Approach

Here, we alter slightly the focus of analysis. Based upon the same theoretical framework as that of the earlier analysis, we now ask how much wage gain unemployed persons achieve from job search by comparing the wage they accept with their reservation wage as of the 1979 interview date. In this scheme, we have two dependent variables: DWAGE, defined as the

Table 2.6 Three-Stage-Least-Squares Estimates for the Difference Between SWAGE and RWAGE (DWAGE) and SDUR, by Sex

	Males		Females	
Variables	DWAGE	SDUR	DWAGE	SDUR
Constant	-0.4025 (-1.02)	1.4011 (1.61)	-0.4838 (-0.73)	1.5536 (1.84)
AGE	-0.0013 (-0.09)		0.0181 (0.87)	
EDUC	-0.0001 (-0.01)		-0.0367 (-1.59)	
AFQT	0.0002 (0.26)		0.0026 (1.38)	
MARRIED		0.0106 (0.05)		-0.1979 (-1.13)
MILITARY		-0.1032 (-0.42)		0.0148 (0.03)
BLACK	-0.0545 (-0.55)	0.1663 (0.65)	-0.0004 (-0.01)	-0.1008 (-0.59)
HISPANIC	-0.0974 (-1.12)	0.2843 (1.16)	0.0901 (1.25)	0.0951 (0.49)
1	0.1312 (0.70)	-0.4217 (-0.83)	0.3004 (2.20)	0.1359 (0.28)
2	-0.4977 (-1.99)	1.3938 (1.80)	0.2649 (1.30)	0.4726 (0.75)
PREWORK	-0.0246 (-0.32)	0.0320 (0.14)	-0.0573 (-0.94)	-0.3567 (-2.60)
W-MEAN	-0.0120 (-0.21)		0.0787 (0.93)	
W-SD	0.0494 (0.46)		0.0396 (0.67)	
DWAGE		2.6691 (3.69)		-0.4921 (-0.70)
SDUR	0.3195 (3.92)		-0.1912 (-1.92)	

difference between log values of SWAGE and RWAGE, and SDUR. The 3SLS results estimated for males and females are reported in Table 2.6.

For the case of males, we find qualitatively the same result as the one we discussed in the previous section. Those who search longer are likely to receive higher subsequent wages relative to reservation wages and vice versa. The coefficient of SDUR, 0.3195, indicates that a 3 percent increase in SDUR results in one percentage point increase in the ratio of SWAGE over RWAGE.

A distinction between the findings of this specification and the earlier one is that a significantly negative effect of SDUR on DWAGE is revealed among females. The coefficient of SDUR indicates that one percent increase in SDUR decreases the ratio of SWAGE over RWAGE by 0.19 percentage point as contrasted to the finding of a nonsignificant impact of SDUR on DWAGE in the previous specification.

In sum, our empirical results for females are consistent with the Kahn's (1978) finding of an inverse relationship between the length of job search and the resulting wage, supporting the hypothesis of a systematic search model without a recall probability. On the other hand, the results for males support the hypothesis of a random search model with a recall probability, indicating that job search yields positive returns.[17], [18]

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[17] Gera and Hasan (1982) also found opposing results between males and females. However, their results, exploring Canadian survey data, showed a pattern opposite to ours in that positive returns from job search were found among females, while negative returns from job search were observed among males.

[18] Throughout this analysis, we did not discuss the coefficients of the variables, λ_1 and λ_2. Basically, in order to account for a selectivity bias, these variables were included to make the conditional expectation of the error term in equation (10) be zero. An intuitive interpretation of this variable is found in Berk and Ray (1982).

V. A SUMMARY OF FINDINGS AND CONCLUSIONS

This longitudinal analysis, using information from the 1979, 1980, and 1981 NLS Youth Cohort, investigated the consequences of job search activities among males and females age 18 to 21. In the first part of the analysis, we analyzed the determinants of the probabilities of being unemployed among those in the labor force and the factors influencing the probabilities of finding a job among those unemployed. In the second part, we examined the relationships among reservation wage, duration of job search, and subsequent wage gain. In order to take sample selectivity into account, we applied a methodology developed initially by Heckman (1976); for the joint estimations of the structural relationships among reservation wages, duration of job search, and subsequent wages, we used the three-stage least squares estimation technique.

The data showed that about 90 percent of males and nearly 80 percent of females who were unemployed in 1979 eventually found a job before the 1981 interview date. On the average, males found a job about 6 months after the 1979 interview date, while females averaged about 7 months. Further, among those who subsequently found a job, for both males and females, the mean value of the subsequent wage is about 20 percent higher than that of the reservation wage as of the 1979 interview week.

As contrasted to most previous studies, our study is unique because it uses information from each individual's employment history. Although we discussed various aspects of the youth unemployment phenomena, the main focus of the analysis was on examining whether or not the length of the job search period leads to positive returns in terms of subsequent wage gains. Major findings of our analysis are that a positive relationship between subsequent wage and the length of job search period was found for males, supporting the inferences from the random job search model with a recall probability; and that a non-positive or a negative association between them was observed for females, depending upon the specification of the model, coinciding with the predictions from the systematic job search model without a recall probability. Many previous empirical studies displayed supporting evidence for a negative relationship between the length of the job search period and subsequent wage gains.

The finding of positive returns to job search activities among male youth holds significant policy implications. The focus of youth unemployment research in the past has been on determining whether youth unemployment reflects a supply-side phenomenon (i.e., unemployment due to too high reservation wages) or a demand-side constraint (i.e., due to lack of the demand for youth employment). Our result for males, however, leads to a different conclusion: although unemployment may indicate a temporary economic loss in the sense that they have to search for some time (say for about six months), the fact that they eventually find a job whose wage is substantially higher than their reservation wage indicates that job search can be a form of investment. This implies that particularly for older male youth unemployment policies should be directed toward facilitating the job-matching process to decrease the duration of job search--for example, by providing better job finding services.

Appendix 2A

On the issues of a stochastic employment process and a non-linear effect of SDUR on SWAGE.

The main focus of the analysis in the text was on the consequences of job search in terms of the structural relationship between SWAGE and SDUR. There are, however, two additional issues which were not dealt with in the text. First, employment represents, to a certain extent, a stochastic process: in other words, some individuals are luckier than others. Second, there is the possibility of a non-linear relationship between SWAGE and SDUR: for example, some studies reported that long-term unemployment is concentrated among a small group of unemployed persons (Cocoran and Hill, 1979; Parnes, 1982).

In order to elaborate the first issue, we constructed the following three-state categorical variable: $p = 1$ if SWAGE > 1.1 * RWAGE (called p_1); $p = 2$ if SWAGE >= 0.9 * RWAGE and SWAGE <= 1.1 * RWAGE (called p_2); and $p = 3$ if SWAGE < 0.9 * RWAGE (called p_3). Basically, under the assumption that the reservation wage was formed rationally, we attempted to classify individuals into three categories: those who are luckier than average persons, average persons, and those who are unluckier than average persons. The proportion of each category, p_1, p_2, p_3 from the sample members were, respectively: 0.47, 0.24, and 0.28 for males; 0.47, 0.36, and 0.17 for females. Using a methodology developed by Theil (1970), we estimate multinomial logit equations for the probabilities p_1, p_2, and p_3. That is, we estimate

$$\ln (p_2/p_1) = XA_a \tag{21}$$

$$\ln (p_3/p_1) = XA_b \tag{22}$$

and then solve for the estimates of p_1, p_2, and p_3 by applying the condition that the sum of estimated probabilities equals to one.

Appendix Table 2A.1 Means and Standard Deviations of Selected Characteristics Among Unemployed and Employed Youths Age 18 to 21 by Sex: 1979[a]

	Males		Females	
Variables	Unemployed	Employed	Unemployed	Employed
AGE	19.37	19.54	19.35	19.55
	(1.17)	(1.11)	(1.12)	(1.11)
EDUC	11.19	11.84	11.51	12.31
	(1.53)	(1.51)	(1.48)	(3.25)
AFQT	64.25	74.07	64.11	76.01
	(23.24)	(20.77)	(21.98)	(18.05)
KOWW	5.98	6.85	6.00	6.81
	(2.31)	(1.94)	(2.22)	(1.81)
SOUTH	0.29	0.28	0.36	0.28
	(0.45)	(0.45)	(0.48)	(0.45)
SMSA	0.74	0.69	0.62	0.74
	(0.44)	(0.46)	(0.49)	(0.44)
MILITARY	0.06	0.03	0.01	0.01
	(0.23)	(0.17)	(0.12)	(0.07)
HIGH SCHOOL	0.15	0.11	0.10	0.06
	(0.36)	(0.31)	(0.31)	(0.25)
FT-COLL	0.16	0.19	0.17	0.22
	(0.37)	(0.39)	(0.37)	(0.42)
MARRIED	0.06	0.11	0.24	0.19
	(0.25)	(0.31)	(0.43)	(0.39)
LIPH	0.82	0.68	0.56	0.55
	(0.38)	(0.47)	(0.50)	(0.50)
BLACK	0.28	0.10	0.27	0.10
	(0.45)	(0.30)	(0.44)	(0.30)
HISPANIC	0.07	0.06	0.06	0.05
	(0.25)	(0.23)	(0.24)	(0.22)
Total (000s)	796	5414	992	4863
N, sample size	332	1568	413	1482

[a] Means and standard deviations represent the population estimates where each response is weighted by the respondent's sampling weight.

Appendix Table 2A.2 Selected Characteristics of Those Who Found a Job Subsequently (SUBJOB = 1) and Those Who Did Not Find a Job (SUBJOB = 0), by Sex: 18 to 21 Years Old Who Were Unemployed in 1979[a]

	Males		Females	
Variables	SUBJOB = 1	SUBJOB = 0	SUBJOB = 1	SUBJOB = 0
AGE	19.41	19.07	19.39	19.21
	(1.16)	(1.23)	(1.12)	(1.14)
EDUC	11.24	10.81	11.68	10.86
	(1.48)	(1.87)	(1.42)	(1.54)
AFQT	64.83	59.17	67.44	51.25
	(22.74)	(26.74)	(20.83)	(21.57)
KOWW	6.03	5.54	6.27	4.98
	(2.37)	(1.59)	(2.02)	(2.63)
UR	6.48	7.46	7.83	9.74
	(3.53)	(4.17)	(3.48)	(4.09)
SOUTH	0.30	0.18	0.36	0.37
	(0.46)	(0.38)	(0.48)	(0.48)
SMSA	0.74	0.71	0.61	0.67
	(0.44)	(0.46)	(0.49)	(0.47)
MILITARY	0.06	0.02	0.02	0.00
	(0.24)	(0.13)	(0.13)	(0.02)
HIGH SCHOOL	0.16	0.12	0.10	0.13
	(0.37)	(0.32)	(0.30)	(0.34)
FT-COLL	0.17	0.10	0.19	0.06
	(0.37)	(0.30)	(0.40)	(0.25)
MARRIED	0.07	0.00	0.24	0.25
	(0.26)	(0.00)	(0.43)	(0.43)
LIPH	0.81	0.96	0.57	0.54
	(0.40)	(0.19)	(0.50)	(0.50)
BLACK	0.26	0.38	0.22	0.48
	(0.44)	(0.49)	(0.41)	(0.50)
HISPANIC	0.07	0.04	0.06	0.07
	(0.26)	(0.20)	(0.24)	(0.26)
LAYOFF	0.19	0.02	0.06	0.03
	(0.39)	(0.15)	(0.24)	(0.17)
UI	0.11	0.02	0.08	0.03
	(0.32)	(0.15)	(0.28)	(0.17)
PREWAGE	0.38	0.48	0.35	0.24
	(0.49)	(0.50)	(0.48)	(0.43)
Total (000s)	716	80	788	204
N, sample size	296	36	311	102

[a] Means and standard deviations represent the population estimates where each response is weighted by the respondent's sampling weight.

As a way to incorporate the second issue, we include a squared term of SDUR in equations (21) and (22).[1] The estimated results by sex are reported in Appendix Table 2A.3.

As shown in the table, we were not successful in isolating the determinants for the conditional logit estimations for $\ln(p_2/p_1)$ or $\ln(p_3/p_1)$ for either sex. A comment is in order. Although the coefficients of SDUR and the square term of SDUR were statistically insignificant, the signs on the coefficients were consistent with our earlier findings: that is, the negative sign on the square term of SDUR implies that the likelihood of receiving lower SWAGE than RWAGE (thus, unluckier) would decline as the search period increases. This finding is, in some sense, contradictory to the argument that long term unemployed persons would take a job at a lower wage. It is also interesting to note that unlike the results of our earlier section, we find a similar pattern for males and females.

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[1] We did not attempt to include this non-linear term in equations (17) to (20) because its inclusion will make the functional forms of the system too complicated to practically solve the system.

Appendix Table 2A.3 Three-Stage Multinomial Logit Estimates for the Probability of Finding a Job Whose SWAGE is Greater than RWAGE by More Than 10 Percent (p_1; SWAGE 1.1 * RWAGE), is About the Same as RWAGE (p_2; SWAGE = 1.1 * RWAGE & SWAGE = 0.9 * RWAGE), and is Less Than RWAGE by More Than 10 Percent (p_3; SWAGE 0.9 * RWAGE), by Sex

(asymptotic t-statistics in parentheses)

Variables	Males		Females	
	$\ln(p_2/p_1)$	$\ln(p_3/p_1)$	$\ln(p_2/p_1)$	$\ln(p_3/p_1)$
Constant	5.8608	0.7501	6.0109	1.0672
	(1.36)	(0.17)	(1.63)	(0.24)
AGE	-0.2190	-0.0614	-0.1513	-0.0993
	(-1.15)	(-0.32)	(-0.95)	(-0.50)
EDUC	-0.0437	-0.0634	-0.0483	0.2139
	(-0.28)	(-0.42)	(-0.37)	(1.25)
AFQT	-0.0004	-0.0086	-0.0066	-0.0342
	(-0.04)	(-0.81)	(-0.62)	(-2.49)
HIGH SCHOOL	-0.2620	-0.7036	0.0973	-0.5622
	(-0.52)	(-1.26)	(0.18)	(-0.86)
FT-COLL	0.4798	0.3604	-0.2074	-0.3708
	(0.73)	(0.54)	(-0.40)	(-0.56)
MARRIED	0.2766	-0.5827	0.4847	-0.0290
	(0.37)	(-0.63)	(1.06)	(-0.05)
SOUTH	-0.8143	-0.4292	-0.1666	-0.3271
	(-2.01)	(-1.04)	(-0.46)	(-0.73)
MILITARY	-1.3092	0.3839	-1.4852	1.4099
	(-1.11)	(0.47)	(-1.20)	(1.49)
LIPH	0.3916	0.7312	0.3866	1.0780
	(0.74)	(1.35)	(1.00)	(2.19)
BLACK	0.6982	0.2614	0.3747	0.7254
	(1.51)	(0.56)	(0.88)	(1.37)
HISPANIC	1.0759	0.0335	-0.4739	0.4009
	(2.10)	(0.06)	(-0.88)	(0.64)
UI	-0.1101	-0.1701	0.8348	0.6522
	(-0.14)	(-0.23)	(1.26)	(0.77)
PREWORK	0.0596	0.0493	0.3662	0.0846
	(0.12)	(0.10)	(1.01)	(0.20)
W-MEAN	-0.3881	0.5474	-0.6452	-0.2928
	(-0.57)	(0.78)	(-0.96)	(-0.37)
W-SD	-0.3877	-1.3010	-0.4529	-0.5371
	(-0.34)	(-1.06)	(-0.99)	(-0.91)
UDUR	-0.1510	-0.1624	-0.0012	-0.1827
	(-0.74)	(-0.79)	(-0.01)	(-0.83)
SDUR	0.3463	0.6428	0.3468	0.9189
	(0.52)	(0.93)	(0.65)	(1.26)
SDUR ** 2	-0.1675	-0.1752	-0.1852	-0.3037
	(-0.75)	(-0.78)	(-1.01)	(-1.28)
Log likelihood	-211.79		-225.78	
Chi-squared (38)	46.62		77.96	
Pseudo R^2	0.0992		0.1472	

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CHAPTER 3

THE EFFECTIVENESS OF JOB SEARCH AND JOB FINDING METHODS OF YOUNG AMERICANS

by

John B. Wielgosz and Susan Carpenter*

I. INTRODUCTION

Economists have long realized that a number of imperfections hinder the efficient operation of the labor market. One potentially very significant imperfection is inadequate labor market information which affects the methods job seekers use to locate work. Inefficient or ineffective job search can lead to an increase in search time, frictional unemployment and a less efficient deployment of labor.

Job search methods are usually classified into two broad categories--formal and informal. Formal methods include searching through public or state employment services, private employment agencies, school placement offices, labor union hiring halls and newspaper advertisements while informal methods include direct application to employers on the off chance that a job vacancy exists and contacting relatives and friends about possible job openings. Although in practice the distinction between these two categories is blurred, it is generally held that formal methods make greater use of extensive and quantitative information and informal methods are more associated with intensive and qualitative information flows. This subjective nature and the apparent hit and miss character of informal channels has provided the conventional justification for government involvement in the labor market through, for example, the state employment services. Despite the plethora of theoretical and empirical research on job search and job finding methods carried out over the last two to three decades, there is little concensus about which method should be encouraged or the relative effectiveness of the different methods. This lack of concensus is clearly evidenced by the following two statements, taken from two separate and reputable studies:

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*The Ohio State University Center for Human Resource Research (on leave from Swinburne Institute of Technology, Australia). Susan Carpenter of the Center for Human Resource Research was responsible for the statistical calculations presented in this paper. We are indebted to Michael Borus, Kezia Sproat and many other people at the Center for their helpful and incisive comments.

> "This 'individualistic' approach to job seeking (using personal contacts, by relying on newspaper advertisements, and by other more fortuitous means) entails two obvious disadvantages: the period of frictional unemployment tends to be longer than it would otherwise be; and there is little assurance that deployment is carried out with maximum efficiency."[1]
>
> "Smaller proportions (blacks and other labor market disadvantaged groups) applied directly to employer or answered local newspaper ads; methods which have relatively high effectiveness rates. (These groups) should be encouraged to use these two methods to a greater extent..."[2]

The theoretical job search literature has not, indeed, been seriously concerned with assessing the relative effectiveness of the different methods. The general objective of the theoretical literature has been to contribute to a general equilibrium theory for the labor market by explaining workers' actions at a high level of abstraction. The main thrust of the theoretical work has been towards explaining the duration of unemployment by focusing on the costs of search, the distribution of job offers and the reservation wage of jobseekers. (See for example, Barron, 1975; Gronau, 1972; Kohn and Shavell, 1974; and Lippman and McCall, 1976.) In essence job search theory is based on the notion of maximizing behavior which, in its simplest form, postulates that the jobseeker will continue to search for offers until an offer yields a wage which is equal or greater than the reservation wage. However, despite the increased theoretical and mathematical sophistication of job search models, taking into account all sorts of pecuniary and non-pecuniary costs and returns to search, unemployment insurance, variable reservation wages, etc., no reference has yet been made to the method(s) of search used by the job seeker. Indeed job search theory implicitly assumes that search is a homogeneous concept and that there is no difference in respect to either costs or returns between the different methods.[3] The empirical research on the other hand has been concerned with the alternative methods of search and job finding. However, with few exceptions, the thrust of the empirical research has been towards answering the question, how do job seekers search for and find work, rather than with the question of relative effectiveness. Over the past two decades there have been approximately 30 major studies and countless smaller studies covering specific subgroups of the population which have collected and presented evidence on the techniques used by jobseekers to search for and locate work. Although these studies differ in respect to timing, location, sample size, jobseeker characteristics and a multitude of other differentiating variables, they have all tended to emphasize the importance of informal channels, suggesting that methods do indeed differ either in respect to costs or returns or some combination of the two. For a detailed description of the empirical literature, see Mangum, 1982.

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[1] Manpower Policy in the United Kingdom, Organization for Economic Co-operation and Development, (Paris 1970), page 163.

[2] Jobseeking Methods Used by American Workers, U.S. Department of Labor, (Bureau of Labor Statistics, 1975). Bulletin 1886, page 2.

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[3] For a more detailed discussion of job search theory see in particular--S.A. Lippman and J. McCall, 'The Economics of Job Search: A Survey,' Parts 1 and 2, Economic Inquiry, Vol. 14 (1976); and S.I. Mangum, 'Job Search: A Review of the Literature,' Office of Research and Development, Employment and Training Administration, (U.S. Department of Labor), February 1982.

Unfortunately the studies which have examined effectiveness have produced mixed results which are limited in application. This uncertainty arises from a number of factors. In some cases the restricted nature of the sample has limited the applicability of the findings. The study by Reid, for example, was confined to unemployed redundant jobseekers in a particular location (Reid, 1972). Other studies have adopted very narrow definitions of effectiveness, for example, the relative success rate associated with particular methods.[4] Furthermore, most studies did not adequately control for the variety of personal and labor market characteristics of the sample under examination.

The general objective of this chapter is to examine the relative effectiveness of job search and job finding methods of young American jobseekers, in a way which overcomes many of the limitations of previous empirical studies. This labor market group was selected partly because of the nature of the job search data available but more importantly because of the labor market facing this group. The youth labor market has long been recognized as posing very serious and in many respects unique problems. Not only are unemployment rates among the young significantly higher than those among older age groups, but also this group faces critical career choices, often with very little prior exposure to the labor market.

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[4] See for example--Job Seeking Methods Used by American Workers, U.S. Department of Labor, (Bureau of Labor Statistics, 1975), Bulletin 1886. Also, Recruitment, Job Search and the United States Employment Service, R & D Monograph 43, U.S. Department Labor, Employment and Training Administration, (1976).

II. EFFECTIVENESS AND EFFICIENCY

This chapter is concerned with the relative effectiveness of job search methods rather than relative efficiency. The two concepts are not the same and it is probably the efficiency aspect which is more important in the longer run. However, to assess the relative efficiency of job search methods it would be necessary to estimate the rate of return on each method as well as the overall effectiveness of particular methods in achieving the desired reallocation of the labor force in a micro and a macroeconomic sense. This estimate would require measuring the intensity of search and the total costs and payoffs at the individual and aggregate level--both pecuniary and non-pecuniary--associated with each method used. Unfortunately, because such information is not available in practice, empirical research has tended to concentrate on the relative effectiveness of job search methods. This study is no exception in that respect. It differs from previous studies, however, in that it uses broader criteria of effectiveness and attempts to control for a variety of personal and labor market characteristics which might impinge on the relative performance of different methods.

Previous studies have generally found that the informal channels are not only more extensively used by jobseekers but are also more effective, e.g., Mangum, 1982; Stevens, 1978. Almost invariably, effectiveness has been measured in one of two ways: either a ratio is estimated between the number of jobseekers who obtain jobs by the method and the number who mentioned using that method, or a ratio is estimated between the number who obtain jobs by the method and the number who used the method most. The first ratio has been more commonly used, mainly because of the nature of the data available. Both methods produce a simple measure of effectiveness which can be best described as a relative success rate. The difference in findings has been fairly minor. All recent major studies of which we are aware have placed the main informal methods towards the top end of the range of effectiveness and the main formal channel, the state employment service, towards the bottom end of the range.[5] The Bureau of Labor Statistics study, for example, ranked the two main informal channels 'friends and relatives' and 'direct application' the first and second most successful methods respectively, and approximately 3-5 times more effective than the state employment service. Other major studies have broadly confirmed these findings, although some have found 'direct application' to be the most effective method. These findings have provided the basis for the conclusion in recent years that informal channels are more effective and that minority groups would benefit in the labor market if they had better access to effective informal information channels.

Despite this concensus, there are a number of problems associated with forming any conclusions about method effectiveness or using such results for deriving any labor market policies.

In general terms the measures referred to above provide some insight into relative usage and success rates. They provide very little information, however, about effectiveness in a broader sense, which would require among other things information about the duration of job search, the costs associated with producing acceptable job offers, and the returns accruing to individual methods.[6] It is conceivable that the most successful methods are also the most costly in the sense that they are associated with longer periods of job search or require a much larger number of contacts to produce an acceptable job offer. At least one study has suggested that 'own search' time and 'outside intermediation' are substitutes in the job-seeking process (Stevens, 1978). That is, the smaller the input of outside intermediation the greater the number of contacts the jobseeker needs to make to secure an acceptable job offer. The evidence on methods of search and duration of search and returns to search is mixed (Reid, 1972; see also Rungeling, Smith and Scott, 1976). Several other problems limit the value of most available job search statistics. First, most available job search statistics refer to unemployed jobseekers only, and although this group of seekers is very important, the evidence suggests nearly as many of the employed seek jobs as do the unemployed. Methods which may be successful or effective for one group may not be for the other. Furthermore, the unemployed are not a homogeneous group. Clearly some have considerable labor market exposure with a network of information flows about the labor market, while others, particularly the young school leavers, may have almost no knowledge of the labor market. Second, simple statistics on job search do not convey any information about the intensity of job search. The knowledge that a job seeker has used a particular method of search tells one little about actual search behavior: jobseekers using the 'friends and relatives' network may have made one job inquiry or have made thousands. Even the number of contacts made may not be all that meaningful if those contacts are wide and casual.[7] Third, it is often difficult to compare search methods because the seeker may change the method over time.[8] Only one method is, however, credited with success, and intermediate methods may either be ignored or forgotten. Furthermore, in the absence of information about duration of search, standard success rates are of dubious value in ascertaining effectiveness.

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[5] See footnote 4 above and Mangum, 1982.

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[6] There are two points which should be made at this stage. First, although duration of job search and unemployment are frequently treated as synonomous, the two concepts are in fact different. Search may well take place after a considerable period of unemployment while many jobseekers undertake search whilst still on the job. Second, one could argue that reduced search time is not necessarily compatible with economic efficiency. Reduced search time may result in a certain degree of mismatching of job and seeker which may in the longer term lead to increased job dissatisfaction. This chapter does not address these particular issues.

The fourth main problem is not specifically related to the standard measures of effectiveness but is a common problem with all existing studies of effectiveness. Without exception empirical studies have focused on the supply side characteristics of the jobseeker. Demand side considerations are generally excluded. Ideally any assessment of effectiveness should consider the methods of searching for and finding work by jobseekers with very similar supply and demand characteristics. Methods successful in some occupations, industries, and geographic areas may be unsuccessful in others. These differences may not be due to a method being more or less effective but because the types of vacancies constrain the methods of search, either in a general sense or because employers choose to use specific methods during periods of high or low economic activity. For example, it is generally recognized that the state employment service tends to attract vacancies from the lower end of the skill range. The service is therefore likely to be constrained by the vacancies at its disposal. Furthermore, it is perhaps not surprising that jobseekers looking for relatively skilled jobs ought to use those methods which are likely to attract the higher skilled/better quality vacancies.

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[7] There is a particular problem here with assessing the effectiveness of the 'state employment service.' Legislative requirements often require unemployed jobseekers to register with the employment service in order to qualify for unemployment benefits. Beyond that requirement the seeker may make little active use of the employment service thereby overstating actual usage of the employment service.

[8] The B.L.S. Survey (see Bradshaw, 1973) found that jobseekers on average used four different methods of job search whilst the NLS 1982 survey reveals that nearly 60 percent of youth used more than one method of search.

The final problem relates to the basic methodology used by nearly all studies of search effectiveness. Most of the empirical research is based on simple cross tabular analysis.[9] Such analysis does not enable us to acertain the effect of particular characteristics, for example, sex, on job seeking behavior, net of other differences associated with that characteristic, for example, occupation or the type of employment sought. Apparent differences in effectiveness rates may be a function of the particular characteristics of the groups examined, so controlling for such differences is obviously important. One option is to examine individuals with identical supply and demand characteristics. Another is to use some form of multivariate regression analysis controlling for characteristics potentially important in the job search process.

This study attempts to overcome many of these problems. Multivariate regression analysis is used to control for a wide variety of individual and job characteristics. The simple success rate is replaced by two separate criteria of effectiveness: (1) the duration of job search, and (2) the level of job satisfaction. The latter criterion is used in preference to earnings differentials in an effort to capture both tangible and non-tangible returns to the job found. In addition, we also examined whether the method of search has any significant impact on the number of job offers received, and these results are presented in the appendix. Certain problems, however, still remain. For example, the cost of search is still almost completely ignored. The information is simply not available (and even if it were it might be of dubious value).[10] Such problems which continue to exist, unfortunately, must be treated as limitations or caveats to be applied to our conclusions.

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[9] An exception to this is the study by Rungeling, Smith and Scott, (1976). This study is, however, very limited in scope.

III. THE DATA

The data for this study was derived mainly from the 1982 National Longitudinal Survey of Youth Labor Market Experience (NLS). This particular survey sampled 12,124 young people age 16-25, representing nearly 35 million youth born during the period 1957 through 1964. The 1982 survey, in addition to obtaining information on job search methods used, also obtained information on the duration of job search, the number and nature of job offers rejected, the successful method of locating work and other aspects useful in assessing the effectiveness of job search methods. Information was also collected on a wide variety of jobseeker characteristics, including the respondent's reservation wage, and the nature of the job sought and ultimately found.

To ascertain whether there is any significant difference between the NLS sample and other studies in respect to the pattern of job search, effectiveness of methods, etc., information was collected and tabulated on job search and job finding patterns of youth, and comparable effectiveness rates were computed for each method used. A selection of these rates is presented in Table 3.1 below.[11]

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[10] There are numerous problems associated with measuring the costs of search. See J. McCall, 'The Job Search,' in a paper presented for 'A Research Agenda for the National Longitudinal Surveys of Labor Market Experience,' Social Science Research Council, (October 1977) and the subsequent discussion of the paper.

The results presented in Table 3.1 confirm what is already widely known about job search and job finding methods. Although there are evident differences by specific subgroups, clearly the most successful methods are the two informal ones, 'friends and relatives' and 'direct applications.' With the exception of the 'other' method, which accounts for only a very small proportion of job seeking/finding activity, these informal methods appear to be approximately twice as effective or successful as the next best methods, and between 3-5 times more successful than the formal channels, the 'state employment service' and 'private employment agencies.'

A common problem with many labor market studies is that the individual characteristics themselves change over time. As such it may be misleading to focus attention on current characteristics in order to explain current behavior. This is likely to be the case with variables such as labor force status, education, age, the reservation wage, exposure to government training programs and so on. The current variable may not be the relevant variable during the period of search. To overcome this problem, jobseeker status at

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[11] Effectiveness rates were also computed for the major occupation and industry groups and a variety of other subgroups of the labor market. There is little point in presenting all of the results here, as the information is generally very similar to the findings of other major studies, both in terms of ranking and overall rates. This was also true when we examined the data on job search and job finding patterns from the 1982 Youth Cohort Survey. Not unexpectedly, given the timing of the survey and the age profile of of respondents, precise comparisons are difficult and minor differences are inevitable. In a general sense, however, the picture was consistant with other major studies' findings.

Table 3.1 Effectiveness of Job Search Methods by Selected Jobseeker Characteristics[a] - 1982

Method	State employ. service	Private employ agency	Friends and relatives	Newspapers	Civil service test	Contact some cbo. office	School placement office	Asked teachers and profs,	Applied direct to employ	Labor union hiring hall	Other
Characteristic											
Age											
16-19	13.9	14.7	57.8	28.1	28.1	7.4	19.4	7.6	63.7	-	40.5
20-21	17.8	19.1	58.0	28.0	27.4	10.9	39.0	6.1	63.9	14.7	63.1
22-25	13.0	19.1	53.6	32.8	34.3	25.7	30.5	16.6	63.4	11.1	65.8
Race											
White	13.9	17.7	55.3	31.4	33.4	14.8	31.0	14.0	63.9	12.2	60.5
Black	15.2	16.9	56.4	24.7	25.7	23.7	23.5	6.9	59.9	-	73.5
Hispanic	18.2	33.5	57.6	35.1	33.4	26.0	36.2	15.9	64.3	46.7	73.2
Sex											
Male	13.4	11.4	59.8	23.9	22.1	23.0	42.8	11.7	63.1	12.5	60.7
Female	15.5	24.2	50.7	36.6	43.6	12.1	20.5	15.0	64.1	-	64.3
Labor force status											
Unemployed	14.5	18.8	51.4	28.3	17.6	17.2	26.8	11.1	61.7	7.1	59.3
Employed	14.1	17.7	62.8	36.5	52.0	25.2	39.7	19.8	67.2	21.5	65.3
Total	14.4	18.5	55.5	30.9	32.1	18.3	30.5	13.5	63.6	11.9	62.4

[a] The effectiveness rates presented above are analagous to the first method outlined above, i.e., the percentage corresponding to the number of jobseekers who obtain jobs by the method and the number who mentioned using that method. CBO refers to community based organizations such as the Urban League, etc.

the time job search commenced was used, information that was readily obtainable from earlier NLS surveys.

Clearly not all of the 1982 respondents could be used here. Of the 12,124 people who were interviewed, approximately 55 percent (6,825) could be considered for this study. The remainder were either still in school or were not in the labor force, were not looking for work when they were offered their current job, or had not worked over the preceding 12-month period. The usable sample was further reduced when we excluded those people who were self-employed or in a family business, those in military service, those currently unemployed and those for whom a complete set of responses could not be assembled. Those currently unemployed were excluded either because they held no previous job and could therefore provide no information on the successful method of job search or because if they were previously employed they were less likely than the currently employed to recall relevant job search and job finding information accurately. The final sample consisted of all those people who at the time of the survey held a permanent job (with the exceptions mentioned above), who indicated that they were searching for work prior to finding their current job, and for whom all relevant information could be assembled. The number of respondents used in the subsequent analysis varied from approximately 1,800 to 3,000 depending on whether jobseeker characteristics were specified in terms of pre-job search status or current status. The latter specification was used in assessing the possible effects of job finding methods on the level of job satisfaction. Finally, to overcome the problem of non-homogeneous labor market groups and the possibility that search method effectiveness may vary according to the labor market group examined, our sample was broken up into three separate subsamples--those who were employed during the search period (32 percent), those who were unemployed but had labor market experience (45 percent), and those who were essentially new entrants into the labor market (24 percent). The latter consisted predominantly of school leavers. Each subsample or group was examined separately in the analysis which follows.

One potentially very important problem in using a subsample from any sample is that certain important characteristics and population attributes may become distorted or lost in the secondary selection process, no matter how representative or accurate the initial survey. To examine whether this was the case with our sample of respondents, frequency distributions of a number of major characteristics and parameters were constructed and the results compared with earlier NLS survey results, the 1982 survey results for the population as a whole, and comparable Current Population Survey (CPS) information.[12] Although some difference was expected, there were no major differences. The general profile of the subsample--in terms of all major characteristics examined, including the occupation and industry profile, the methods of search used, the successful methods of finding work, the percentage of respondents using multiple search methods, etc. --was remarkably similar to the overall 1982 youth survey results and earlier youth survey results.

The variable which did, however, cause some concern was the average duration of job search, which was considerably less than the average duration of unemployment as estimated by the CPS. On the basis of our subsample of respondents, the average duration of job search was estimated as approximately 4-8 weeks, being at the lower end of the range for the employed jobseeker and at the upper end for the unemployed jobseeker. Although this is very similar to earlier NLS estimates it is considerably less than the CPS estimate of mean duration of unemployment of approximately 16 weeks for 1982.[13] Given the nature of our data, however, a substantial difference is to be expected. Search time and unemployment are not the same and search often takes place after a period of discouragement and joblessness has been experienced. More important, however, is the fact that our sample includes only those who currently hold a job, i.e., those who were successful in finding work, while the CPS estimate includes also those who were unsuccessful, including those with very long durations of unemployment. This point is clearly evident if one compares the CPS average and median duration of unemployment. The latter is approximately one-half that of the former.

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[12] The Current Population Survey (CPS) data used for comparison here was obtained from the Monthly Labor Review, U.S. Department of Labor, Bureau of Labor Statistics (various issues) and Employment and Earnings, U.S. Department of Labor, Bureau of Labor Statistics (various issues).

In general, therefore, the sample group used for this study revealed all of the major characteristics and attributes of the youth labor market as evident in the major surveys, not only with respect to individual characteristics, occupation and industry profiles, but in terms of their methods of search and finding work. For example, the BLS survey estimated that for the 16-20 age group, approximately 64 percent applied directly to employers and 27 percent made use of the state employment service. Our estimate varied by less than 10 percent in each case, while the overall ranking of all methods was almost identical. We would therefore argue that the findings of this study have a more general applicability than the size of the subsample might suggest.

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[13] Monthly Labor Review, U.S. Department of Labor, (Bureau of Labor Statistics), (February 1983), Table 7.

IV. THE STATISTICAL ANALYSIS

To overcome the limitations associated with simple cross tabular analysis, multivariate regression analysis was used to determine whether different methods of job search had a statistically significant impact on the duration of search when a number of the variables likely to influence method effectiveness are controlled. The duration of job search (duration) can be ascertained directly from the 1982 survey. Because this variable can be specified as a continuous variable, and because Hispanics, blacks, and poor non-Hispanic, non-black youth in the sample are over-represented, weighted ordinary least squares analysis was used to estimate the parameters of the equations. In addition, probit equations were estimated to see whether alternative methods of finding work (again controlling for a number of relevant variables) exert an independent and significant influence on the level of job satisfaction.[14] Job satisfaction was deemed the most appropriate variable for assessing whether particular methods of finding work lead to a more efficient deployment of labor because satisfaction encompasses both monetary and non-monetary considerations. We would argue that alternative criteria such as earnings differentials and employment stability are too limited because they either focus exclusively on monetary returns or they may be significantly determined by external economic conditions. The level of job satisfaction was specified as a dichotomous variable taking the value 1 if the respondent indicated that he/she was 'very satisfied' with the current job and

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[14] The 1982 survey includes a number of job satisfaction questions ranging from a simple single global job satisfaction question to a question based on a complex 10 item job satisfaction scale. Since the evidence suggests that the mean of the single global question is essentially identical to the mean of the complex scale, it would appear to matter very little which information is used. See Borus, 1981 page 140. For the purposes of this study it was decided to use the simple single question.

0 otherwise. The percentage who responded that they were very satisfied with their existing job was approximately 36 percent, only marginally more than the 34 percent who responded in a similar way in the total 1979 NLS youth survey.

The independent variables included in the 'duration' equations encompassed a number of variables likely to influence search method effectiveness. These include age, sex, race, marital status, educational attainment, type of work sought (whether part-time or full-time), exposure to government training programs and the broad occupation and industry classification of the jobseeker. The latter was specified as a system of dummy variables and was included partly to control for relative supply and demand conditions facing particular occupations and industries and partly in recognition of the fact that certain search methods may be constrained by the type of job vacancies available. The search variables too were specified as a system of dummy variables with the 'predominant method of search' being allocated the value 1 and all other methods having a value of 0. All coefficients were estimated with reference to the 'state employment service.'[15] In addition, we also included as independent variables the state unemployment rate (to capture the influence of general demand constraints and thus the opportunity cost of prolonging search), whether single or multiple search methods were used, the distance travelled to search for work (a proxy for extent of the labor market), and the jobseeker's stated reservation wage. The latter variable is included since job search theory postulates an individual supplier of labor formulates a reservation or minimum acceptance wage which determines which job offers are to be rejected and hence the duration of job search. One other point should be made about variable specification. Where the characteristic, status of the individual, or other variable such as unemployment rate was susceptible to possible change over time, the variable at the time search commenced was the one used. This specification involved working backwards and extracting the appropriate information from earlier surveys.

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[15] Information is collected on eleven different methods of search. Each separate method is included in this analysis. An alternative would have been to group the various methods into either formal or informal categories. The former approach was deemed preferable. In the first instance respondents were asked to indicate which methods of search they had used and subsequently the predominant method of search used. The first question enabled us to ascertain which respondents used multiple search methods while the subsequent question provided the necessary information for the search variables in the search and offers equations.

The independent variables in the 'job satisfaction' equations were specified in essentially the same way as for the 'durations' equations. There were, however, a number of differences. First, the type of work sought was replaced by actual hours of work and the individual's reservation wage was replaced by current earnings.[16] Second, the number of employer contacts made by the jobseeker and the duration of search were included as additional independent variables to ascertain whether jobseekers who search for a longer period of time and make a greater number of employer contacts obtain jobs that produce a greater level of job satisfaction. Third, in looking at job satisfaction, the appropriate variable is the method of finding work rather than the method of search. As such the latter variable was replaced by the former. Again the coefficients are estimated relative to the state employment service. Finally, since the issue of timing is not particularly important in the job satisfaction equations, all variables are expressed in terms of current period status.

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[16] There is a possible problem of endogeniety associated with these and other variables in that these variables themselves may be determined by the search method. To test for this possible problem, separate equations were estimated with these variables ommitted. However, this made little difference to either the coefficients or significance levels of the other variables in the equations. As such, it was decided to include these variables in the equations presented here.

Separate equations were estimated for each of the separate labor market groups identified and the results are presented in Tables 3.2 and 3.3.

V. THE FINDINGS

Duration of Job Search

As expected, sufficient differences appeared in the results for the three separate labor market groups to cast considerable doubt on the findings of studies which treat all groups as homogeneous. Quite apart from the substantial difference in the duration of job search, important differences also appeared with respect to individual variables and coefficients. For example, labor unions as a method of job search have significant but opposite effects for employed and unemployed jobseekers. There are many possible reasons for this difference, one being that construction union hiring halls cater to union members based on seniority. However, this method accounts for only a very small percentage of overall job search activity.

The main findings relate to the different methods of job search and the duration of search. Contrary to the widely held view that the state employment service reduces the period of frictional/search unemployment and the findings of a number of studies suggesting no significant difference in duration of seach between various search methods and duration of search, (Reid, 1972; Rungeling, Smith and Scott, 1976) our findings presented in Table 3.2 show that almost all methods of job search are associated with significantly shorter durations of search when compared with the state employment service. This finding is broadly evident for the three separate

Table 3.2 Multiple Regression Estimates for Duration of Job Search[a]

(t-values in parentheses)

Independent variables	Employed during search	Unemployed but with labor market experience	Unemployed new entrants
Age	0.01	-0.03	-0.01
	(0.17)	(-1.57)	(-0.32)
Sex			
Female	-	-	-
Male	0.12	0.16	0.23
	(1.23)	(1.90)*	(1.95)*
Race			
White	-	-	-
Black	0.12	0.45	0.32
	(0.82)	(4.38)**	(2.07)*
Hispanic	-0.16	-0.11	-0.09
	(-0.94)	(-0.83)	(-0.40)
Marital status			
Never married	-	-	-
Married	-0.16	-0.17	0.27
	(-1.48)	(-1.98)*	(1.53)
Other	-0.40	0.22	-0.52
	(-2.02)*	(1.33)	(-1.05)
Educational attainment			
High school completed	-	-	-
High school dropout	0.08	-0.06	0.12
	(0.54)	(-0.67)	(0.66)
Post high school education	0.04	-0.18	-0.15
	(0.37)	(-2.11)*	(-1.02)
Work sought			
Part-time	-	-	-
Full-time	0.07	-0.01	-0.18
	(-0.38)	(-0.02)	(-1.22)
Exposure to govt. training programs	-0.28	0.01	0.21
	(-2.21)*	(0.07)	(1.48)
Occupation			
Skilled white collar	-	-	-
Sales	0.04	0.01	-0.30
	(0.22)	(0.22)	(-1.35)
Clerical	0.01	0.10	-0.12
	(0.05)	(0.83)	(-0.76)
Craftsmen	0.09	0.31	-0.93
	(0.53)	(1.91)*	(-3.67)**
Operatives (inc. transport)	0.18	0.37	-0.61
	(1.00)	(2.47)*	(-2.92)**

Table 3.2 (Cont.)

Independent variables	Employed during search	Unemployed but with labor market experience	Unemployed new entrants
Laborers (inc. farm laborers)	0.14	0.16	-0.93
	(0.62)	(0.93)	(-3.58)**
Service (inc. private household)	-0.12	0.07	-0.56
	(-0.78)	(0.55)	(-3.01)**
Industry			
Manufacturing	-	-	-
Primary (inc. mining)	-0.03	0.44	0.62
	(-0.15)	(1.98)*	(2.12)*
Construction	0.06	-0.13	0.02
	(0.27)	(-0.75)	(0.05)
Transport	0.24	0.13	0.15
	(1.19)	(0.67)	(0.55)
Trade (wholesale & retail)	-0.12	0.06	0.29
	(-0.87)	(0.52)	(1.81)*
Professional and public administration	0.15	0.28	-0.15
	(1.04)	(2.23)*	(-0.92)
Other industries (finance, entertainment, etc.)	0.15	0.25	0.01
	(1.06)	(2.07)*	(0.05)
State unemployment rate	0.03	0.02	0.05
	(1.78)*	(1.71)*	(2.29)*
Use of multiple search methods	-0.68	-0.65	-0.67
	(-8.09)**	(-8.59)**	(-5.91)**
Distance travelled to search for work	0.01	0.01	0.01
	(2.18)*	(3.06)**	(2.84)**
Reservation wage	0.0001	0.0001	0.0001
	(0.86)	(0.87)	(0.35)
Predominant method of search			
State employment service	-	-	-
Private employment service	-0.43	-0.14	-0.84
	(-1.59)	(-0.77)	(-2.68)**
Asked friends/relatives	-0.41	-0.27	-0.92
	(-1.98)*	(-1.94)*	(-4.31)**
Placed/answered newspaper advertisements	-0.36	-0.41	-0.82
	(-1.73)*	(-3.05)**	(-3.77)**
Civil service test	-0.04	-0.47	-0.25
	(-0.10)	(-0.85)	(-0.39)
Contacted CBO	0.38	-0.59	-0.49
	(0.69)	(-0.93)	(-0.76)
Contacted SPO	-0.14	0.22	-0.82
	(-0.54)	(0.97)	(-3.08)**
Asked teachers, profs., etc.	-0.43	-0.97	-1.12
	(-1.22)	(-1.55)	(-3.13)**

Table 3.2 (Cont.)

Independent variables	Employed during search	Unemployed but with labor market experience	Unemployed new entrants
Checked labor unions	1.99	-1.25	-
	(2.96)**	(-2.74)**	
Applied directly to employers	-0.69	-0.31	-0.83
	(-3.35)**	(-2.41)*	(-4.05)**
Used other methods	-0.37	-0.54	-0.66
	(-1.12)	(-1.71)*	(-1.38)
Intercept	1.72	2.04	2.66
	(2.77)**	(4.01)**	(3.31)**
Number of respondents	578	833	438
R^2 adjusted	0.21	0.18	0.22
F ratio	5.24	6.15	4.51

**Significant at 1 percent level.

* Significant at 10 percent level.

[a]Duration of search is in weeks and is expressed in log form.

groups but is particularly evident for the new entrant group. For this group information provided by 'teachers and professors' and 'friends and relatives' had the greatest impact on duration. Private employment agencies and direct application to employers came next, having an almost identical impact on duration. They were followed by 'newspapers' and the 'school placement office.' There was, however, no statistically significant difference between the state employment service, civil service tests and the use of community-based organizations such as Urban League, etc. Although the effects were less pronounced for the other two groups, the general picture was basically the same. In all cases the main informal channels--friends and relatives and direct application--were associated with significantly shorter durations of search. Precisely why the state employment service is associated with a significantly longer duration of search is not ascertainable from the evidence available. Other research has indicated that individuals seeking employment use informal job search methods first and then turn to formal methods such as employment services. This obviously would lead to longer duration of unemployment for those observed to have used formal methods. Moreover, the most employable individuals do not need to turn to employment services. Alternatively it may be that other methods are simply more effective in conveying the necessary job information at a lower cost.

A number of other important points can be made on the basis of the information contained in Table 3.2.

(i) Individuals who used multiple job search methods had considerably shorter duration of job search than those who relied on one method only. The use of multiple search methods for all three groups significantly reduced the duration of job search and, interestingly, the magnitude of effect is approximately the same for all three groups. The fact that this variable is highly significant suggests that it has an independent influence on duration of search over and above the influence of any individual method of search. It is likely that this variable is a reasonable proxy for intensity of job search.

(ii) Arguments that youth have unrealistically high reservation wages that lead to prolonged periods of search are not substantiated by the evidence here. Although the influence is positive, it is extremely small and statistically insignificant. On the other hand, the demand for labor (as measured by the state unemployment rate) was positively and significantly associated with duration of search. Its influence was particularly pronounced for the new entrant group. However, although significant, the influence of this variable was considerably less than either the method of search or the occupation of the jobseeker.

(iii) The occupation variables are generally consistent with expectations in that the duration of search associated with semi-skilled and unskilled occupations is usually longer than for skilled occupations. However, this pattern does not hold for new entrants in the skilled white collar occupation group who have a significantly longer duration of search. Again the reasons for this difference are not clear although it probably reflects a wider area of search because of important career choices and the large investment in education.

(iv) Individual jobseeker characteristics provide a variety of results. Generally their influence is considerably less than the method of search, the use of multiple search methods, and occupation. In terms of sex and race, males and blacks experience significantly longer durations of search but only among the unemployed and new entrants, not among those already employed. This difference adds another dimension to the already significant labor market problem facing black youth, and supports to some extent the view that an important problem faced by this group may be the lack of effective job search channels (Rees, 1966; Mangum, 1982). Exposure to government training programs does not appear to be the solution, because for both the unemployed and new entrant group this variable was associated with increased duration of search although the influence was insignificant. Other variables behaved in accord with a priori expectations although important differences appeared between labor market groups.

It seems that duration of search and the method of search are significantly related providing some justification for the extensive use of the informal channels. In terms of this criterion just about all methods of search perform better than the state employment service while multiple search method users appear to have a further advantage in terms of reduced search time.

Level of Job Satisfaction

A widely held view in recent years is that informal channels of job search enable a more efficient deployment of labor because of the intensive and qualitative information they convey. This argument has been espoused on numerous occasions and has now become the basic explanation for the extensive use of informal channels of search and recruitment (see U.S. Department of Labor, 1975). The limited evidence available has provided some support for this argument although it is hardly conclusive.

Our findings about job satisfaction, presented in Table 3.3, do not support the view that informal channels convey a particular type of information which produces greater job satisfaction. The method of finding work appears to exert little influence on job satisfaction, regardless of the labor market group under examination. Indeed the only method which attained

Table 3.3 Probit Estimates for Job Satisfaction Equations

(t-values are in parentheses)

Independent variables	Employed during search	Unemployed but with labor market experience	Unemployed new entrants
Age	-0.04	-0.05	-0.04
	(-1.50)	(-2.09)*	(-1.32)
Sex			
Male	-0.22	-0.18	0.03
	(-2.16)*	(-1.79)*	(0.02)
Race			
White	-	-	-
Black	-0.12	-0.53	0.03
	(-0.98)	(-0.49)	(0.23)
Hispanic	0.03	-0.03	0.26
	(0.25)	(-0.26)	(1.82)*
Marital status			
Never married	-	-	-
Married	0.02	0.14	-0.12
	(0.23)	(1.52)	(-0.01)
Other	0.16	-0.05	-0.16
	(0.92)	(-0.36)	(-0.68)
Educational attainment			
High school completed	-	-	-
High school dropout	0.20	0.05	0.10
	(1.39)	(0.54)	(0.59)
Post high school education	-0.03	-0.10	-0.10
	(-0.27)	(-0.83)	(-0.79)
Hours of work			
Part-time	-	-	-
Full-time	0.21	0.23	0.01
	(1.44)	(2.23)*	(0.09)
Exposure to govt. training programs	-0.17	0.12	0.11
	(-1.32)	(1.19)	(0.80)
Occupation			
Skilled white collar	-	-	-
Sales	0.07	-0.38	-0.10
	(0.30)	(-1.48)	(-0.40)
Clerical	-0.41	-0.07	0.01
	(-3.01)**	(-0.46)	(0.07)
Craftsmen	-0.27	-0.05	0.05
	(1.		
		*	(-2.66)**
Laborers (inc. farm laborers)	-0.44	-0.39	-0.34
	(-2.00)*	(-1.98)*	(-1.32)

Table 3.3 (Cont.)

Independent variables	Employed during search	Unemployed but with labor market experience	Unemployed new entrants
Service (inc. private household)	-0.33 (2.16)*	-0.24 (-1.47)	-0.21 (-1.16)
Industry			
Manufacturing	-	-	-
Primary (inc. mining)	0.27 (1.14)	0.14 (0.64)	-0.14 (-0.43)
Construction	0.36 (1.51)	0.15 (0.80)	-0.01 (-0.05)
Transport	0.43 (2.32)*	0.19 (0.96)	0.06 (0.27)
Trade (wholesale and retail)	0.27 (1.87)*	0.06 (0.41)	0.01 (0.04)
Professional and public administration	0.43 (2.76)**	0.34 (2.29)*	0.38 (2.41)*
Other industry (inc. finance and entertainment)	0.23 (1.56)	0.05 (0.32)	0.06 (0.36)
Number of contacts made with employers	-0.00 (-0.50)	0.00 (0.65)	-0.00 (-1.03)
Period of search	0.02 (0.36)	-0.003 (-0.06)	-0.01 (-0.30)
Current earnings	0.0001 (2.66)**	0.0001 (2.45)*	0.0001 (2.42)*
Method of finding work			
State employment service	-	-	-
Private employment service	-0.24 (-0.80)	-0.05 (-0.22)	-0.49 (-1.48)
Through friends and relatives	-0.05 (-0.45)	-0.08 (-0.70)	0.10 (0.72)
Newspaper advertisements	0.06 (0.36)	-0.22 (-1.44)	0.22 (1.16)
Civil service test	-0.23 (-0.83)	-0.27 (-0.68)	-0.66 (-1.63)
Some CBO	0.25 (0.38)	-0.11 (-0.28)	0.30 (0.70)
School placement office	-0.17 (-0.64)	-0.20 (-0.49)	-0.01 (-0.04)
Teachers and profs.	0.66 (1.52)	-0.35 (-0.53)	0.65 (1.63)
Labor unions	0.17 (0.19)	-0.35 (-0.35)	0.34 (0.30)
Direct application to employers	-0.03 (-0.27)	-0.08 (-0.75)	0.15 (1.15)
Other methods	0.61 (2.13)*	-0.07 (-0.25)	0.07 (0.20)

Table 3.3 (Cont.)

Independent variables	Employed during search	Unemployed but with labor market experience	Unemployed new entrants
Intercept	0.34 (0.57)	0.46 (0.81)	0.19 (0.31)
Number of respondents	1003	1118	803
2 times log likelihood	-646.49	-698.66	-502.02
Chi-squared (35)	72.16	56.11	58.30
Percent responding 'very satisfied' with job	42.07	35.42	37.48

** Significant at 1 percent level

* Significant at 10 percent level

an acceptable level of statistical significance is the 'other' method for the employed group only. It appears that the main variables influencing job satisfaction are the occupation and industry variables. Not surprisingly, job satisfaction is generally associated with the skilled white collar occupation groups and it decreases with the level of skill involved. The only other variable to significantly influence job satisfaction for all three groups is the individual's current earnings--however the degree of influence is very small. Interestingly, neither the duration of search nor the number of employer contacts made exerted any significant influence on job satisfaction.

VI. CONCLUSIONS

The results presented here have potentially very important implications both for job search theory and labor market policy. Job search theory which implicitly assumes that job search is homogeneous and that the duration of search is largely determined by the costs of search and the individual's reservation wage is not supported by the evidence presented in this paper. The method of search used by the jobseeker appears to have a very significant influence on the duration of job search. If methods of search and recruitment vary with changed economic conditions or with certain subgroups of the labor market--as the empirical evidence suggests--then alternative methods of search ought to be explicitly included in the theoretical models.

With reference to labor market policy, the view that government intervention in the labor market through the state employment service can reduce the period of search and the amount of frictional unemployment and enable a more efficient deployment of labor is also not supported by the evidence here. As far as the youth labor market is concerned, it seems that just about any method of search was better than the state employment service in terms of duration of job search, and individuals who used multiple search methods instead of relying on a single one experienced even shorter duration of search. A disturbing feature was that the state employment service performed relatively badly--both with reference to duration of search and the number of job offers received (see appendix 3A)--for the new entrant group, a group very likely to be at a considerable disadvantage in terms of labor market experience and exposure. The reasons for the relatively poor performance of the state employment service are not readily apparent and ought to be the subject of future research. Clearly the state employment service is an important labor market institution and an important channel of job search for many subgroups of the population. If the service is to discharge its functions effectively it needs to attract vacancies. It will have difficulty doing so if the service is widely believed to be ineffective and inefficient. A redeeming point for the service is that we find no significant difference between alternative job finding methods and the resulting level of job satisfaction. Apparently informal methods are widely preferred because they reduce duration of search, not because they provide certain important intensive and qualitative information about the work place and working conditions.

The findings here have emphasized the need for further research in this important area. For a start a closer examination of the state employment service brokerage function is essential. It is important to find out precisely why the service takes significantly longer to place jobseekers. If it is the result of vacancy constraints, what are the reasons for this? Has the service a distinct comparative advantage or disadvantage in placing certain subgroups and filling certain vacancies? It may be that rather than attempting to cater to all groups, the services' activities ought to be confined to particular areas of activity as has often been suggested. Second, more attention ought to be devoted to the demand side and demand constraints in looking at jobseeking behavior. Traditional job search theory (and indeed existing empirical studies) have concentrated on supply side considerations in explaining job seeking behavior. There is sufficient evidence in this study and elsewhere to suggest that demand factors are also important. Finally, we would point out that in many respects our results are preliminary. They tell us little about the actual costs and benefits associated with alternative methods of search and how these costs and benefits vary over time. Nor do they tell us a great deal about the probability of securing employment via alternative methods.

APPENDIX 3A

Here we briefly examine whether the method of search exerts an influence on the number of job offers the jobseeker receives. As with duration of job search, the number of job offers received can be ascertained directly from the 1982 survey. This can be done from the question or number on job offers refused. In the event of 'no refusal,' the respondent is allocated 'one job offer,' while those with a refusal had one added to the number of refusals, thereby creating a continuous series of job offers received. Ordinary least squares analysis can then be used to see whether method of search has a statistically significant impact on the number of job offers received. The independent variables were specified in the same way as for the 'duration' equations. An additional variable - the number of employee contacts made by the job seeker - was included in the 'offers' equation. The results for 'number of offers received' are presented in the Appendix Table 3A.1.

The information presented in the table suggests that alternative methods of search have a very small impact on the number of job offers received. One interesting finding is for the new entrant group, where all methods had a positive impact on offers received when compared with the state employment service. However, only newspapers, school placement office and the 'other' category attained an acceptable level of statistical significance. Indeed, school placement office was positive and significant for the other two labor market groups examined as well.

Not surprisingly, the main group of variables influencing the number of job offers received are the occupation and industry variables. Relative to the main skilled white collar occupations, all other occupation groups had a lower propensity for attracting job offers, and in the majority of cases the results were statistically significant. This significance is broadly

Appendix 3A.1 Multiple Regression Estimates for Number of Job Offers Received During Period of Job Search[a]
(t-values are in parentheses)

Independent variables	Employed during search	Unemployed but with labor market experience	Unemployed new entrants
Age	-0.01	0.01	0.01
	(-0.07)	(1.02)	(0.90)
Sex			
Female	-	-	-
Male	0.07	0.02	-0.07
	(1.41)	(0.48)	(-1.36)
Race			
White	-	-	-
Black	-0.08	-0.04	-0.06
	(-1.10)	(-0.70)	(-0.88)
Hispanic	-0.11	0.04	-0.03
	(-1.22)	(0.57)	(-0.32)
Marital status			
Never married	-	-	-
Married	-0.05	-0.03	0.07
	(-0.94)	(-0.73)	(0.98)
Other	0.06	0.19	-0.03
	(0.62)	(2.25)*	(-0.16)
Educational attainment			
High school completed	-	-	-
High school dropout	-0.07	0.02	-0.03
	(-0.94)	(0.40)	(-0.37)
Post high school education	0.74	0.08	0.07
	(1.47)	(2.00)*	(1.15)
Work sought			
Part-time	-	-	-
Full-time	-0.09	0.06	-0.01
	(-1.03)	(1.05)	(-0.04)
Exposure to govt. training programs	0.14	-0.03	-0.05
	(2.20)*	(-0.71)	(-0.87)
Occupation			
Skilled white collar	-	-	-
Sales	-0.20	-0.16	-0.01
	(-2.17)*	(-1.78)*	(0.14)
Clerical	-0.29	-0.05	-0.35
	(-4.23)**	(-0.86)	(-5.06)**
Craftsmen	-0.29	-0.12	-0.28
	(-3.28)**	(-1.59)	(-2.58)**
Operatives (inc. transport)	-0.23	-0.28	-0.33
	(-2.73)**	(-3.95)**	(-3.70)**
Laborers (inc. farm laborers)	-0.25	-0.21	-0.16
	(-2.23)*	(-2.62)**	(-1.40)
Service (inc. private household)	-0.29	-0.13	-0.14
	(-3.74)**	(-2.16)*	(-1.77)*
Industry			
Manufacturing	-	-	-
Primary (inc. mining)	0.02	0.05	0.25
	(0.19)	(0.51)	(2.08)*

Appendix 3A.1 (Cont.)

Independent variables	Employed during search	Unemployed but with labor market experience	Unemployed new entrants
Construction	0.09	-0.09	0.03
	(0.82)	(-1.07)	(0.18)
Transport	0.13	-0.09	-0.16
	(1.32)	(-1.01)	(-1.46)
Trade (wholesale and retail)	0.10	-0.11	-0.01
	(1.50)	(-1.91)*	(-0.14)
Professional and public administration	0.22	-0.12	-0.08
	(3.06)**	(-1.96)*	(-1.19)
Other industry (finance, entertainment, etc.)	0.15	-0.07	0.10
	(2.19)*	(-1.20)	(1.48)
State unemployment rate	-0.02	-0.01	-0.03
	(2.39)*	(-0.27)	(-3.06)**
Use of multiple search methods	0.01	-0.13	0.04
	(0.10)	(-3.45)**	(0.74)
Distance travelled to search for work	0.01	-0.01	0.03
	(0.30)	(-2.10)*	(4.62)**
Reservation wage	0.0002	-0.0001	-0.0001
	(1.78)*	(-1.20)	(-0.07)
Number of contacts made with employers	0.01	0.01	0.01
	(5.86)**	(6.41)**	(4.06)**
Predominant method of search			
State employment service	-	-	-
Private employment service	-0.03	0.10	0.14
	(-0.25)	(1.14)	(1.06)
Asked friends and relatives	-0.10	0.09	0.11
	(-0.95)	(1.28)	(1.24)
Placed/answered newspaper advertisements	0.05	0.11	0.24
	(0.47)	(1.62)	(2.59)**
Civil service test	-0.26	-0.15	0.37
	(-1.22)	(-0.57)	(1.34)
Contacted CBO	0.04	0.19	0.06
	(0.14)	(0.56)	(0.23)
Contacted SPO	0.23	0.37	0.36
	(1.77)*	(3.26)**	(3.19)**
Asked teachers/profs. etc.	-0.05	-0.09	0.05
	(-0.27)	(-0.29)	(0.32)
Checked labor unions	0.50	-0.15	-
	(1.40)	(-0.68)	
Applied directly to employers	-0.13	-0.01	0.13
	(-1.23)	(-0.07)	(1.46)
Used other methods	-0.20	0.23	0.57
	(-1.21)	(1.38)	(2.76)**
Intercept	0.62	0.11	0.17
	(2.01)*	(0.45)	(0.51)
Number of respondents	568	817	429
R^2 adjusted	0.23	0.13	0.39
F ratio	5.64	4.31	8.71

**Significant at 1 percent level.

* Significant at 10 percent level.

[a] Number of offers expressed in log form.

confirmed by the industry variables and no doubt largely reflects relative supply and demand conditions faced by particular occupations and industries. A number of other variables attained levels of statistical significance; however, their relative impact was generally quite small. For example, while 'number of contacts made with employer' was highly significant in all cases (influencing offers received in a positive way), the degree of influence was extremely small. An important exception was with multiple search methods and the unemployed group. However, although the degree of influence was quite substantial and significant, the direction of influence was negative. In summary, therefore, it appears that alternative search methods do not exert a great degree of influence on the number of job offers received: occupation and industry of jobseeker appear to be more important factors. These results are not surprising. It should be kept in mind, however, that the majority of jobseekers (approximately 80 percent) in fact tend to accept the first job offer received. Under such circumstances, the number of offers received may not be a particularly good criterion of effectiveness. Furthermore, in the absence of information as to whether more job offers is better than less job offers, there are problems associated with using offers received as an effectiveness criterion. That a particular method of search is associated with more job offers that are rejected by the job seeker may itself be interpreted as an indication of inefficiency or ineffectiveness.

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CHAPTER 4

RACE, EMPLOYMENT AND EDUCATIONAL ATTAINMENT

by Joan E. Crowley

I. INTRODUCTION

One of the many explanations offered for the relatively low occupational prestige and earnings of black Americans has been their lack of access to quality education, long seen as a key to occupational advancement in the United States. In recent years, however, the difference in the occupational attainment of blacks and whites has narrowed considerably, implying an eventual narrowing of economic outcomes as well (U. S. Bureau of Census, 1982). In recent studies, blacks have been found to aspire to higher levels of education than whites, with the race difference increasing if socioeconomic factors are held constant (Crowley, et al., 1983; Howell and Frese, 1982, p. 157). This paper will attempt to explore the dynamics of educational attainment by young people in the United States, with a focus on possible race differences in attaining desired levels of schooling.

It is hypothesized that minorities place more emphasis on education than do whites, ceteris paribus, as a means of replacing an inadequate informal network with a formal credential to present to prospective employers. Blacks are more likely to use formal methods of job search--placement offices and employment services, than are whites, despite the fact that informal methods--referrals from friends or direct application to employers--appear to produce the most satisfactory results. These race differences are usually explained by noting that, due to their concentration in less desirable jobs, blacks are less likely to have an effective network of contacts which could provide referrals to jobs with good pay or potential for advancement (See Chapter 3 of this volume and Becker, 1980). The same argument should extend to other minority groups, and to women entering previously male fields. The relative lack of informal networks should increase the importance of formal educational credentials for minorities.

If blacks do place more reliance than whites on formal educational credentials, it is important to know to what degree they are actually able to fulfill their aspirations, and what barriers they face in the process. This analysis uses data from the NLS youth panel to look at educational expectations[1] and educational attainment in 1982 as functions of their initial 1979 levels, background variables, and the employment and family role experiences in the intervening three years.

While educational attainment is important in understanding variations in labor market experiences of young people, educational expectations or aspirations are important in understanding variations in educational attainment. If, for example, minority youth desire less education than whites, the discrepancies in education would be of less concern to policy makers than if minorities had educational goals equal to or greater than whites but minorities faced more problems in attaining their goals. Recent research has emphasized the importance of intentions as determinants of actions (Bentler and Speckart, 1981; Kahle and Berman, 1979; Liska, et al., 1984). The model guiding this analysis posits that background factors (such as parent's education) produce educational intentions (expectations), and that these expectations interact with situational resources (income, ability) in determining eventual educational attainment.

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[1] Youths reported both how much education they desired and how much education they expected to get. As expected, these two variables are highly correlated, but there are some important conceptual and empirical differences. Conceptually, expected education should be more realistic, reflecting real life constraints (money, family obligations, ability), while aspirations may represent more wishful thinking. Expectations for additional education also imply a greater motivational commitment to school, so this variable should be more closely related to actual enrollment and educational attainment (Bentler and Bonnett, 1980). Empirically, research on the initial year of the NLS youth panel indicated that expected education tended to produce stronger relationships with other variables than did desired education, suggesting that expectations are measured with less noise than are aspirations (Crowley and Shapiro, 1982). Since patterns of correlations with associated variables are quite similar for the two attitudinal measures, for this paper only expectations will be used.

Most of the previous studies in this area involve school-based samples studied cross-sectionally. The NLS includes youth who have left school, and it covers enough time to determine how stable youthful aspirations are and how successful youth are in meeting their goals. The large samples of blacks and Hispanics in the panel make possible a detailed look at differences in the dynamics of educational attainment by race.

Three separate groups, defined by their 1979 educational status, will be investigated: youth who were enrolled in 11th or 12th grade; youth who were out of school; and youth who were in college. Each group faces a different educational decision in the observed period. The high school students will decide whether or not to continue their education past high school; the out of school youth may choose to return to school; and the college students will either continue their educations, graduate, or leave without receiving a degree.

The first part of this chapter will use tabular analysis to show the patterns of educational attainment and expectations over the period from 1979 to 1982. The second part will present a model of educational attainment derived from previous literature and apply it to the NLS data.

II. MEASUREMENT OF EDUCATION

Several indicators of educational attainment and goals are used here. Attainment is most simply defined as years in school. The simplicity of this measure is somewhat complicated by the difference in types of schools which could be attended. In this analysis, trade school education will not be considered, only high school and two- or four-year colleges. Where possible, degrees from two-year colleges will be presented separately from two years of a four-year college. Educational expectation is measured on a scale ranging up to 17, where 17 represents a post-graduate degree.[2]

Because a major question to be addressed by this study is whether minorities have more difficulty than whites in attaining their goals, a success variable was constructed by comparing 1979 expectations and 1982 attainment. Youth still enrolled in school are counted either as being "successfully" on their way to the goal, or put in as a separate category. Many youth changed their educational expectations either upward or downward over the three-year period, so a second success variable was constructed using expectations and attainment both measured in 1982. The 1979-1982 measure of success indicates how well youth fared in meeting earlier goals, and the 1982-1982 measure should show how many still desire more education.

While race differences in attaining educational goals may suggest barriers to education, such data give very little information about the nature of such barriers. The NLS includes an item each year asking youth who have left school their reason for leaving. Their answers suggest what the youth themselves see as standing between themselves and higher levels of education.

III. NET CHANGES IN EDUCATIONAL EXPECTATIONS AND ATTAINMENTS, 1979-1982

Table 4.1 shows educational attainment in 1982 by attainment in 1979,

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[2] Unfortunately, it is not possible to differentiate youth who expect to attend only two years of college from youth who expect to get a two-year degree.

Table 4.1 Educational Attainment in 1979 and 1982 for Youth Enrolled in School in 1979
(Percentage Distributions)

Educational attainment 1979	% of Total	Educational Attainment 1982				
		Less than 12 years	12 years	Some College	Associate Degree	16 or more years
% of Total	100	29	35	25	2	10
Less than 12 years	76	39	44	17	1	0
12 years	9	0	17	74	6	3
13 or more years	15	0	0	34	4	62

Universe: Enrolled civilians in 1979, interviewed in 1982. (weighted N=21,376,000; unweighted N=7,081) separately for in-school and out-of-school youth. In 1979, three quarters of enrolled respondents were in high school. By 1982, 62 percent of the youth who were in high school had graduated, and eighteen percent had gone on to college, although none had completed a baccalaureate. Similarly, most of the college students had gone on to finish their degrees. A small proportion of the population had received associate's degrees.

The marginal distributions of Table 4.2, educational expectations 1979 by educational expectations 1982 for enrolled respondents, show a general increase in educational expectations, with over half of the sample expecting at least a baccalaureate and a fifth expecting to go on to post-graduate education. Youth who expected degrees tended to maintain that expectation, but non-degree expectations were highly unstable. Almost two-thirds of the enrolled youth who expected to complete less than 12 years of education in 1979 expected to complete at least high school three years later.

The interpretation of expectations for some college below the BA level is clouded by the fact that a score of 14 could either mean two years of college with no degree or college leading to an associates degree. It is reasonable to presume that many youth reporting that they expect to complete 13, 14, or 15 years of school are actually indicating that they expect to leave school at the end of the current enrollment. Fewer than one respondent in 20 reports expecting to complete 13 or 15 years of schooling. However, over ten percent report expecting 14 years of schooling, no doubt reflecting expected enrollment in two-year programs.[3] Note that the majority of youth expecting 14 years of education in 1979 expect either to stop with a high school diploma

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[3] The problem is further complicated by the fact that some youth, especially those still in high school, may be reporting expectations for trade school enrollment, which is not counted as regular schooling by our definitions.

Table 4.2 Educational Expectations in 1979 and 1982 for Youth Enrolled in School in 1979

(Percentage Distributions)

Educational expectations 1979	% of Total	Educational Expectations 1982					
		Less than 12 years	12 years	13 or 15 years	14 years	16 years	17 or more years
% of Total	100	3	28	5	13	31	21
Less than 12 years	2	36	50	2	9	4	0
12 years	32	7	60	5	14	12	2
13 or 15 years	4	2	29	13	24	24	9
14 years	11	1	25	9	28	33	5
16 years	35	1	9	4	11	51	24
17 or more years	17	0	4	2	4	27	64

Universe: Enrolled civilians, interviewed in 1982. (weighted N=21,314,000; unweighted N=7,060) or to continue on to a bachelor's degree in 1982, with almost the same proportions revising their estimates up as down.

High educational expectations, bachelor's degree and beyond, are highly stable. Almost equal proportions of those with high expectations expect bachelor's degrees or expect to continue to go on for post-graduate education. Those who revise downward below the bachelor's degree are about equally split between expecting high school diplomas and expecting associate degrees.

For out-of-school youth, increased education means going back to school rather than continuing enrollment. Most of those who were out of school in 1979 had high school diplomas, but about a third were high school dropouts (Table 4.3). Dropouts were most likely to increase their educational level: 15 percent of the high school dropouts reported having completed either a high school degree or receiving a GED by 1982. One tenth of the dropouts who had attended some college had completed bachelor's degrees by 1982. The group least likely to obtain additional education were the high school graduates.

Predictably, relative to the in-school group, the out-of-school youth reported relatively little change in their educational expectations. (Table 4.4). High school graduates were least likely to change. Out-of-school youth with very high expectations were more likely to moderate their ambitions than are their student counterparts, but these modifications were not as great as might be expected. The majority of youth who expected to get a college degree or more in 1979 maintained these expectations in 1982.

Despite a fairly substantial amount of change by individual respondents in their expectations, the marginal distributions remain quite similar, with no general trend in either direction for the out-of-school youth, and a slight increasing trend for students. Interpretating the results is difficult,

Table 4.3 Educational Attainment in 1979 and 1982 for Youth Out of School in 1979 (Percentage Distributions)

Educational attainment 1979	% of Total	Educational Attainment 1982				
		Less than 12 years	12 years	Some College	Associate Degree	16 or more years
% of Total	100	27	58	14	0	1
Less than 12 years	32	85	15	0	0	0
12 years	57	0	94	6	0	0
13 or more years	12	0	0	89	2	10

Universe: Out-of-school civilians in 1979, interviewed in 1982. (weighted N=11,328,000; unweighted N=3,826)

Table 4.4 Educational Expectations in 1979 and 1982 for Youth Out of School in 1979 (Percentage Distributions)

Educational expectations 1979	% of Total	Educational Expectations 1982					
		Less than 12 years	12 years	13 or 15 years	14 years	16 years	17 or more years
% of Total	100	13	48	6	15	14	4
Less than 12 years	14	55	36	2	5	2	1
12 years	49	9	70	4	9	6	1
13 or 15 years	8	1	25	26	27	18	3
14 years	15	2	33	8	34	21	3
16 years	12	1	16	5	23	43	12
17 or more years	3	0	7	9	5	39	39

Universe: Out-of-school civilians in 1979, interviewed in 1982. (weighted N=11,226,000; unweighted N=3,762) because the expectation tables do not take into account the initial education level of the respondents. Next we break down the sample into more homogeneous groups, and make the comparisons of educational experiences by race and sex which will lay the groundwork for exploring barriers to educational attainment.

1979 high school students.

High school students may either stay and graduate, perhaps to continue to college, or dropout. Because the dynamics of dropping out have been addressed elsewhere (Borus, 1982), we focus here on the decision to stay in school and go to college. The analysis will be restricted to respondents enrolled in 11th or 12th grades in the spring of 1979. All of the 1979 12th graders and most of the 11th graders should have been out of high school for at least two years by the time of the 1982 interview.

Table 4.5 describes the educational attainments and expectations of these older high school students during the three years from 1979 to 1982, by race and sex. Educational attainment refers to the highest grade completed: i.e., youngsters currently enrolled in 11th or 12th grade have completed the 10th or 11th. It is notable that Hispanic males are substantially more likely than other groups to have completed only the 10th grade. Other research has found that Hispanics are more likely to be held back, often due to language problems (Fligstein and Fernandez, 1983). The relatively large proportion of the sample who report having completed only 10 years of education can be attributed mainly to youth dropping out between 11th and 12th grades, since seven percent of the youth reported less than 12 full years of education by 1982.

It is striking that although 7 percent have dropped out, only one in one hundred of the respondents report expecting to. For the entire group, the

Table 4.5 Educational Indicators for Youth in 11th and 12th Grades in 1979, by Race and Sex (Percentage Distributions)

Chacteristics	Female			Male			Total
	Black	Hispanic	White	Black	Hispanic	White	
Percent of total	7	2	39	7	3	41	100
Educational attainment, 1979							
10th Grade	56	56	54	53	59	52	54
11th Grade	44	44	46	47	41	48	46
Total percent	100	100	100	100	100	100	100
Educational expectations, 1979							
Less than 12 years	1	1	0	1	1	1	1
High school graduate	37	34	33	44	37	40	37
Some college	17	23	24	13	16	14	19
Bachelor's Degree or Greater	45	41	43	43	46	45	44
Total percent	100	100	100	100	100	100	100
Educational attainment, 1982							
Less than 12 years	10	10	5	16	16	6	7
High school graduate	52	58	52	56	54	54	53
Some college or greater	38	32	43	28	30	40	40
Total percent	100	100	100	100	100	100	100
Educational expectations, 1982							
Less than 12 years	1	1	1	3	3	1	1
High school graduate	24	27	33	28	24	36	33
Some college	25	35	23	20	28	17	21
Bachelor's degree or greater	50	37	44	49	45	45	45
Total percent	100	100	100	100	100	100	100
Success in reaching 1979 goals[a]							
Yes	30	27	29	29	24	34	31
Still in school	35	28	39	29	29	37	37
No	36	45	32	43	47	29	32
Total percent	100	100	100	100	100	100	100

Table 4.5 (Continued)

Chacteristics	Female			Male			Total
	Black	Hispanic	White	Black	Hispanic	White	
Success in reaching 1982 goals[a]							
Yes	21	22	33	25	20	36	32
Still in school	35	28	39	29	29	37	37
No	45	50	28	47	51	27	31
Total percent	100	100	100	100	100	100	100
Reason for leaving school							
Got degree	65	65	70	61	49	69	68
Got married, pregnant, home responsibilities	7	6	4	1	2	0	3
Don't like school, poor grades	3	5	7	6	14	7	7
Work, money problems	15	9	8	14	16	11	11
Expelled	1	0	0	4	2	1	1
Other	10	15	11	15	19	12	12
Total percent	100	100	100	100	100	100	100

UNIVERSE: Civilian high school students in 1979, interviewed in 1982. (weighted N=7,052,000; unweighted N=2,359

[a] UNIVERSE: Civilian high school students in 1979 interviewed in 1982, who expected more education than they had obtained in 1979. (weighted N=7,059,000; unweighted N=2,363)

[b] UNIVERSE: Civilian high school students in 1979, interviewed in 1982, out-of-school, 1982. (weighted N=4,018,000; unweighted N=1,418)

modal expectation is for a bachelor's degree, and the next largest category is high school graduation. Women are more likely than men to aspire to some college, especially white and Hispanic women. Overall, almost two-thirds of the late high school sample expect to complete at least one year of college.

By 1982, all youth in the high school sample should have been out of high school for at least two years, if they graduated on schedule. Over ninety percent of the sample had in fact graduated from high school. The proportion going on to college, forty percent, is substantially lower than the proportion who had expected to go to college. Some of these youth may be deliberately postponing college entry for various reasons.

Minority males were least likely to report having completed high school, and whites are more likely than others to have gone to college. Among blacks, there is a large difference by sex in college enrollment. Almost two-fifths of the black women had completed at least one year of college, ten percent higher than the proportion of black men who reported the same level of attainment. Hispanics, both men and women, are relatively unlikely to go on to college.

The distribution of educational expectation does not change much when the total sample is considered. Somewhat fewer youth expect to stop with a high school diploma, somewhat more expect to go to college. However, there are substantial shifts within the minority groups. There is a twelve percent increase in the proportion of Hispanics, both women and men, who expect to complete some college, accompanied by a very small decline in the proportion expecting a bachelor's degree or more. Blacks increased their educational expectations generally, with increases both in the "some college" and the bachelor's categories. Whites, on the other hand, stayed quite stable. Thus, the gap between the proportion expecting to go to college and the proportion who actually went to college cannot be accounted for by any reduction in desire for education. Especially among minorities, the general trend was to increase the amount of education desired.

A short-hand summary of the match between expectations and attainment was created by simply contrasting the two variables; the youth were coded as "successful" if the respondent was out of school and the amount of education attained in 1982 was greater than or equal to expectations in 1979; as "still in school"; or "not successful" if the youth was out of school in 1982 and had not attained the level of education expected in 1979. Because of the large proportion of this subsample still in school, it is easier to speak of "failures" than successes, keeping in mind that at least a portion of the current failures will eventually return to school. To keep the focus on the ability of youth to meet educational goals, the success variables are presented only for youth who expected to attain more education than they had already completed in 1979, that is, youth who still had goals to meet.

Clearly, the group least likely to meet their educational goals is the Hispanics. Whites, especially white males, are most successful. The largest gender gap shows up among black youth, with black females being less likely to have left school without completing their expected education than black males.

While success can be defined in terms of early expectations, it is also instructive to look at success in terms of current expectations. How many out-of-school youth still expect to increase their education? The success variable was constructed using 1982 expectations. Of course, the same respondents are still in school in 1982, but the distributions of successes and failures among the out-of-school youth are different. Whites seem to be more likely to have fit their goals to their attainments, so that a slightly larger percentage of both males and females fall into the 1982 success category than was true for the 1979 variable. For minorities, the pattern is reversed. The proportion wanting more education than they have attained is actually increased if current rather than previous goals are used as the standard.

To help explain why there might be a gap between expected and attained education, respondents who had left school were asked their reasons for leaving. A large set of responses was collapsed into into four major categories in order to provide enough cases for discussion. The four categories were getting the desired degree, home responsibilities including pregnancy or marriage, dislike of school or poor grades (presumably highly correlated), and financial reasons--either to take a job or because of money problems. It was presumed that those leaving school because of money problems were quite likely to enter the labor market, and so to be part of the group leaving school in order to work. A very small fraction of youth left school because they were expelled, but this category is presented because of its relevance to issues about the quality of education. Various other reasons were collapsed into one residual category.

Most of the high school sample who were out of school by 1982 reported that they had left school because they had completed their degrees. Note that this degree was not necessarily the highest to which they aspired: the vast majority are high school diplomas, although a fraction had completed two-year college courses and received associate degrees. Hispanic males are conspicuously underrepresented among those leaving school with a degree, and overrepresented among those leaving school because of poor grades or because they didn't like school. Money problems are most likely to be mentioned by minority males and by black females, although the difference between minorities and majority whites is not large among the males.

1979 college students.

Table 4.6 shows the distributions of the educational attainment and expectation variables for the subsample of youth who were enrolled in college in 1979. Whites make up a larger proportion of college students than they do of the high school sample, as expected. The age range of the NLS assured that in 1979 there would be at least some youth in almost all stages of undergraduate school, with very few post-graduate students. Overall, whites tended to be somewhat ahead of minorities in college, while the mean attainment for all sex-race groups hovered around thirteen years. Black females had the lowest average attainment.

Among the college sample, distributions for 1979 expectations show that the gender gap between black males and black females expressed by high school students reverses for college students, with men having higher expectations than women. In general, men in college are much more likely to expect to go on to graduate school than are women, while women are more likely than men to expect to complete less than four years of college.

The educational attainments of college students over the three years between the 1979 interview and the 1982 interview does not show as much difference between men and women as might have been predicted from the 1979 expectations. Note that if all college students had stayed in school until finishing their degrees, the distribution of attainment would show very few respondents with less than 15 years of education. We assume that respondents who report 12 or 13 years of schooling in 1982 have dropped out of school at some point in the period (although some of the "dropouts" may have returned by 1982), and we further assume that minorities, especially Hispanic women, are more likely to have dropped out. At the upper end of the distribution, men

Table 4.6 Educational Indicators for Youth Enrolled in College in 1979, by Race and Sex (Percentage Distributions)

Chacteristics	Female			Male			Total
	Black	Hispanic	White	Black	Hispanic	White	
Percent of total	6	2	41	4	2	44	100
Educational attainment, 1979							
12	46	45	39	43	41	34	37
13	28	27	29	24	32	29	29
14	17	18	18	21	16	22	20
15 or more	9	11	14	13	11	16	14
Total percent	100	100	100	100	100	100	100
Mean	12.88	12.94	13.08	13.02	13.00	13.19	13.11
Educational expectations, 1979							
13-15	17	24	18	11	12	9	13
16	55	47	51	46	51	45	48
17 or more	28	29	32	43	37	46	39
Total percent	100	100	100	100	100	100	100
Educational attainment, 1982							
12	7	5	6	14	9	5	6
13	18	28	11	16	17	7	11
14	27	23	17	19	26	16	18
15	27	19	25	22	14	29	26
16	19	25	36	24	27	34	33
17 or more	1	1	4	4	7	9	6
Total percent	100	100	100	100	100	100	100
Educational expectations, 1982							
13-15	20	20	17	13	14	11	14
16	45	44	37	35	43	38	38
17 or more	36	36	46	53	43	51	48
Total Percent	100	100	100	100	100	100	100
Success in reaching 1979 goals[a]							
Yes	11	16	24	8	18	18	19
Still in school	39	42	36	39	28	47	41
No	50	42	40	54	54	35	39
Total percent	100	100	100	100	100	100	100
Success in reaching 1982 goals[a]							
Yes	15	8	21	12	22	20	19
Still in school	39	42	36	39	28	47	41
No	46	50	43	50	50	33	40
Total percent	100	100	100	100	100	100	100

Table 4.6 (Continued)

Chacteristics	Female			Male			Total
	Black	Hispanic	White	Black	Hispanic	White	
Reason for leaving school[b]							
Got degree	50	36	66	39	43	61	61
Got married, pregnant, home responsibilities	10	3	6	7	2	0	4
Don't like school, poor grades	3	5	5	2	2	6	5
Work, money problems	20	34	8	25	36	14	13
Expelled	1	2	0	1	0	1	1
Other	16	20	15	25	16	18	17
Total percent	100	100	100	100	100	100	100

UNIVERSE: Civilian college students in 1979, interviewed in 1982. (weighted N=5,040,000; unweighted N=1,483)

[a] UNIVERSE: Civilian college students in 1979, interviewed in 1982, reporting 1979 educational expectations higher than 1979 educational attainment. (weighted N=5,080,000; unweighted N=1,492)

[b] UNIVERSE: Civilian college students in 1979, interviewed in 1982, out-of-school, 1982. (weighted N=2,875,000; unweighted N=891)

are generally more likely to have received 15 or more years of education than women. This sex difference is roughly constant by race.

Comparison of the distributions of expected education in 1982 with expected education in 1979 suggests that going to college leads to wanting more college, as demonstrated by the increase in the proportion of youth aspiring to graduate school. The largest such increase was reported by white women. Young men are slightly more likely to report expecting some college in 1982 than in 1979. The increased aspiration for graduate school seems to have come mainly from among those initially aspiring to a bachelor's degree.

The two success variables show that black and Hispanic men and black women have the highest failure rates, while white males are least likely to be out of school and wanting more education. Using 1979 goals compared to 1982 goals, we see no large increase in the proportion of failures except among Hispanic women, suggesting that the big increase in expectations for graduate school is concentrated among those still in college.

Reasons for leaving school among college students are very similar to those reported for high school. Whites are more likely than minorities to say that they left upon completion of a degree. Minorities, on the other hand, are more likely than whites to leave because of money problems or to find work; Hispanics are more likely to report leaving for this reason than are blacks. It was expected that leaving school for family reasons would be reported primarily by women, but this prediction held only among whites, where 6 percent of the women and virtually none of the men left due to family constraints. Among minority youth, both men and women gave family responsibilities as the reason for leaving. Hispanics actually were less likely to use this reason than were blacks or white women.

Youth out of school in 1979.

Most of those out of school in 1979 were high school graduates who had not gone on to college (Table 4.7). Large differences appear by race, however. Whites are most likely to be high school graduates; over half of the out-of-school Hispanics are high school dropouts; and the proportion of black dropouts falls between the proportions for whites and Hispanics. In general, women within each racial group are less likely to have dropped out and more likely to have attended college than their male counterparts, with the largest sex difference showing up among the blacks.

Educational expectations in 1979 were much higher than educational attainments, even among this out-of-school subsample. The proportion expecting to attend college ranged from 32 percent for Hispanic men to 47 percent for black women. On the other hand, well under half of the dropouts expected to remain dropouts.

A relatively small proportion of the out-of-school population had increased their 1979 educational level at the end of three years. The proportion of dropouts declined modestly, about six percent for each group. The proportion of the subsample completing at least one year of college rose modestly, by about three percent. These increases were spread fairly evenly by sex and race. Educational expectations changed less, overall, than did educational attainments. A very small trend was for further decreases in the proportion expecting to have less than a high school diploma along with increases in the proportion expecting to go to college.

The success variables are presented only for the subset of youth whose educational expectations were higher than their attainments in 1979. For the out-of-school sample, this restriction substantially reduces the number of cases under consideration. The success variables, as expected, show that most

Table 4.7 Educational Indicators for Youth Out of School in 1979, by Race and Sex (Percentage Distributions)

Chacteristics	Female			Male			Total
	Black	Hispanic	White	Black	Hispanic	White	
Percent of total	7	4	42	7	3	37	100
Educational attainment, 1979							
Less than 12	37	55	25	49	61	30	31
12	47	36	60	44	32	61	57
13 or more	16	9	15	7	8	10	12
Total percent	100	100	100	100	100	100	100
Educational expectations, 1979							
Less than 12	8	23	12	15	26	15	14
12	46	40	50	45	42	51	49
13 or more	47	37	38	41	32	34	37
Total percent	100	100	100	100	100	100	100
Educational attainment, 1982							
Less than 12	32	48	20	44	54	25	27
12	48	42	62	47	33	62	58
13 or more	20	10	18	9	13	13	15
Total percent	100	100	100	100	100	100	100
Educational expectations, 1982							
Less than 12	9	20	11	11	24	14	13
12	41	41	48	49	45	51	48
13 or more	50	39	41	40	31	36	39
Total percent	100	100	100	100	100	100	100
Success in reaching 1979 goals[a]							
Yes	5	5	6	6	6	6	6
Still in school	9	7	12	6	11	10	10
No	86	88	82	88	83	84	84
Total percent	100	100	100	100	100	100	100
Success in reaching 1982 goals[a]							
Yes	22	25	32	16	20	31	28
Still in school	9	7	12	6	11	10	10
No	69	68	56	78	69	60	62
Total percent	100	100	100	100	100	100	100
Reason for leaving school							
Got degree	40	30	53	35	30	51	49
Got married, pregnant, home responsibilities	25	25	14	3	8	2	10

Table 4.7 (Continued)

	Female			Male			Total
Chacteristics	Black	Hispanic	White	Black	Hispanic	White	
Don't like school, poor grades	9	11	13	20	19	20	16
Work, money problems	10	15	9	19	24	13	12
Expelled	2	0	0	9	4	3	2
Other	14	19	11	14	16	12	12
Total percent	100	100	100	100	100	100	100

UNIVERSE: Out-of-school civilians in 1979, interviewed in 1982. (weighted N=11,261,000; unweighted N=3,777)

[a]UNIVERSE: Out-of-school civilians in 1979, interviewed in 1982, whose 1979 educational expectations exceeded their 1979 educational attainments. (weighted N=5,646,000; unweighted N=2,100)

of the out-of-school sample had failed to meet their educational goals. Failure rates for 1979 goals were highest for minority females and for black males. Given the relatively small changes in education and expectations, the overall failure rate for 1982 goals is, surprisingly, 22 percent lower than the failure rate for 1979 goals. As expected, whites are most likely to have completed their goals, and whites also show the biggest improvement in success from 1979 to 1982. Blacks have the least success, especially black males. It appears that at least part of the improvement comes not from obtaining additional education but from adjusting expectations to match attainment. Since whites seem no more likely than minorities to have increased their educational levels, the difference in success rates probably reflects attitudinal changes.

As with the high school and college groups, among the out-of-school group getting a degree is the reason most whites give for leaving school. It is also the most prevalent reason given by other groups. However, Hispanic men are almost as likely to leave school to go to work as they are to leave because they graduated. Men, especially minority men, are more likely than women to leave school to work than women. There are few race differences in the proportion of youth reporting that they left school because they were not happy there, another response given substantially more often by men than by women. The expected sex difference in the proportion of youth leaving school for family reasons shows up sharply for the out-of-school sample. One fourth of Hispanic and black women say that they left school for family considerations. Given the relative concentration of dropouts in this sample, it is not surprising that a significant number say they were expelled. Blacks are expelled more frequently than other groups.

III. MODELS OF ATTAINMENT

Level of education has been identified as an important factor in determining where in the occupational structure an individual will enter, which in turn affects occupational advancement (Treas and Tyree, 1979). It is important, too, to understand the process by which some individuals end up with more education than others. Three sources were used to develop a model for multivariate analysis of the various measures of educational attainment--two based on theoretical work on attainment and one focusing on role transitions during young adulthood.

The most common framework for assessing educational and occupational attainment is the Wisconsin model. Briefly,

> The model ... assumes that predetermined social structural and psychological factors, i.e., socioeconomic status and mental ability, affect the youth's academic performance and the influence signifcant others have on him; that the influence of significant others and possibly his own ability affect his levels of educational and occupational aspiration; and that levels of aspiration affect educational and occupational status attainment. Thus, the model provides a causal argument linking social origins and ability with educational and early occupational status attainment by means of intervening behavioral mechanisms (Sewell, et al., 1970).

The Wisconsin model was initially developed on an all-male sample, and other studies have found that the mechanisms do not entirely hold for other groups, notably for blacks and for white females. Specifically, many of the indicators of socioeconomic status associated with educational attainment for white males are less strongly associated with attainment for blacks and females (Morgan, et al., 1979; Hout and Morgan, 1979).[4]

Gottfredson (1982) has developed a model of occupational attainment which draws from developmental as well as socialization processes. Her model emphasizes stages in development of self-concept relevant to occupation, with orientations to status and sex-role appropriateness developed before specific occupational aspirations are formed. Analysis of the first wave of the NLS indicated that sex role attitudes were indeed strongly related to educational aspirations and expectations, both for young men and young women (Crowley and Shapiro, 1982).

While the NLS does not provide data on many of the key constructs used in either of these theoretical approaches, it does contain the principal measures of socioeconomic background. In addition, the NLS is ideally constructed to include measures of life events which should affect the decision to enter or leave school. Specifically, youth who marry or become parents should be less likely to continue their education. These transitions make going to school more difficult in two ways: marriage establishes a new family unit, which increases the youth's need for income, and the need for income is exacerbated by the birth of a child. Secondly, especially for young women, parenthood increases the demands for time spent at home, both for direct child care and for home maintenance.

It is also hypothesized that youth who leave school and have difficulty in establishing themselves in the labor market should tend to increase their educational aspirations. Particularly for school dropouts, the need for the educational credentials should become salient if jobs are not available. This would account for the greater increase in educational expectations among minority dropouts than among white dropouts. The job search literature suggests that whites apparently have more effective informal networks for obtaining good jobs than do blacks, and this effect should be magnified at lower educational levels among those who have little in the way of formal credentials to offer employers. A personal reference may be the only source of information about the quality of performance an employer could expect from a teenaged job applicant. The unemployment rate for white teenagers is typically half the unemployment rate for black teenagers, suggesting that white dropouts are more likely than blacks to enter the labor market successfully.

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[4] Interestingly, Hout and Morgan (1975) found that black females had a pattern of results more similar to the pattern for white males than did either white females or black males.

Three multivariate models will be used to explore young people's success in meeting their 1979 educational goals. The first enters basic demographic and family background characteristics, along with sex role attitudes, self esteem, and educational attainment as of 1979. The second model adds a set of dummy variables for 1979 educational expectations, and the third adds both educational expectations and indicators of role transitions to the basic model. The role transitions used for all groups include living apart from parents, marriage, and parenthood. For out-of-school youth, weeks employed and unemployed are also entered, to test the hypothesis that employment difficulties may lead to increased educational aspirations.

All multivariate analyses are based on the general linear model, with modifications appropriate to the measurement level of the dependent variable. Dichotomous variables are analysed using probit, which estimates the probability of succeeding, given the predictor variables.[5] Change in educational expectations is measured as a trichotomy, according to whether the individual's expectations increased, decreased, or did not change. Highest grade completed will be estimated using OLS.

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[5] Probit fits a non-linear function, so the partial derivative of the change in the probability of success depends upon the point of evaluation. A common strategy used here is to calculate the partials at the point where all predictors take on their mean value. This strategy produces distortion in the

IV. RESULTS

Success in Meeting 1979 Educational Goals.

High school students. Table 4.8 shows the probit results describing the youth who had met their 1979 educational goals and had left school by 1982 among the high school sample. In interpreting the results, it must be kept in mind that the analysis is restricted to youth who were out of school in 1982. Thus, for this group, success means at most three years of college. Those who succeeded are therefore predominately high school graduates.

The importance of controlling for expectations is shown in the change in the influence of parent's education. In model A, the less education the parents have, the more likely their children are to meet their educational goals. With level of aspiration controlled, however, children with parents who have a high school education or more are more likely to be able to meet their goals. Youth from intact homes are also more likely to get their desired education. Sex role attitudes are significant in the basic model, but drop out when expectations are controlled.

The range of initial educational attainment for this universe is quite narrow, but even the single year separating those who had completed ten years of education from those who had completed eleven years is significant, and becomes stronger when expectations are taken into account. The pattern no

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interpretation of dummy variables, since they are estimated at a value between zero and one which is not possible in the data--e.g., counting an individual as .54 male. However, the results do give a sufficient indication of the direction and stability of the relationship for the current purpose.

Table 4.8 Probit of Success in Meeting 1979 Educational Goals for Youth Who Were High School Students in 1979

	A		B		C	
Predictors	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean
Constant	-0.427 (-0.44)[a]		-6.084 (-0.89)		-6.943 (-1.02)	
Age	0.055 (1.24)	.022	0.028 (0.44)	.006	0.068 (1.04)	.015
Parent's education						
High school dropout	0.182 (2.32)*	.072	-0.249 (-2.17)*	-.055	-0.253 (-2.17)*	-.055
High school graduate	--	--	--	--	--	--
College	-0.449 (-4.85)*	-.179	0.164 (0.98)	.036	0.111 (0.65)	.024
Lived with both parents at age 14	0.104 (1.43)	.041	0.352 (3.30)*	.078	0.340 (3.10)*	.074
Number of siblings	0.010 (0.73)	.004	-0.003 (-0.14)	-.001	0.0002 (0.01)	.0001
Race and sex						
Black male	-0.430 (-3.90)*	-.171	-0.290 (-1.78)	-.064	-0.223 (-1.32)	-.048
Hispanic male	-0.592 (4.31)*	-.236	-0.446 (-2.22)*	-.098	-0.421 (-2.08)*	-.091
White male	--	--	--	--	--	--
Black female	-0.479 (-0.63)	-.191	-0.196 (-0.17)	-.043	0.135 (0.11)	.029
Hispanic female	-0.724 (-0.95)	-.288	-0.284 (-0.24)	-.063	-0.009 (-0.01)	-.002
White female	-0.248 (-0.33)	-.099	-0.184 (-0.16)	-.041	0.051 (0.04)	.011
Sex-role traditionality	0.082 (4.62)*	.033	-0.017 (-0.61)	-.004	-0.006 (-0.20)	-.001
Self-esteem	-0.028 (-1.84)	-.011	0.032 (1.28)	.007	0.031 (1.18)	.007
Number of children desired	-0.069 (-2.21)*	-.027	0.035 (0.69)	.008	0.044 (0.83)	.009

Table 4.8 Continued

Predictors	A		B		C	
	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean
Sex interactions with[b]:						
Sex-role traditionality	-0.028 (-1.14)	-.011	0.008 (0.21)	.002	-0.0002 (-0.01)	-.0001
Self-esteem	0.002 (0.08)	.001	-0.012 (-0.36)	-.003	-0.005 (-0.16)	-.001
Number of children desired	0.021 (0.50)	.009	-0.003 (-0.03)	-.001	-0.021 (-0.29)	-.005
Educational attainment						
10 yrs.	-0.223 (-2.80)*	-.089	-0.697 (-5.60)*	-.154	-0.702 (-5.50)*	-.152
11 yrs.	--	--	--	--	--	--
Educational expectations						
Less than 12 yrs.	--	--	6.026 (0.90)	1.331	6.229 (0.94)	1.350
12 yrs.	--	--	6.427 (0.96)	1.419	6.617 (0.99)	1.434
13-15 yrs.			3.367 (0.50)	.744	3.426 (0.52)	.743
16 or more yrs.	--	--	--	--	--	--
Lived with parents, 1979	--	--	--	--	-0.011 (-0.03)	-.002
Live with parents, 1982	--	--	--	--	-0.108 (-0.88)	-.023
Married, spouse present, 1979	--	--	--	--	-0.016 (-0.03)	-.003
Married, spouse present, 1982					-0.181 (-1.19)	-.039
Ever had a child, 1979	--	--	--	--	-0.273 (-1.06)	-.059
Ever had a child, 1982	-- --	-- --	-- --	-- --	-0.495 (-3.67)*	-.107

Table 4.8 Continued

Predictors	A		B		C	
	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean
-2 * log likelihood ratio	149.61		1334.04		1358.83	
N	1543		1543		1543	

[a]Number in parentheses is the estimate divided by the standard error.

[b]For interaction terms, sex is coded male equals 1.

UNIVERSE: Civilian high school students in 1979, interviewed in 1982.

doubt reflects the greater proportion of eventual dropouts included in the 10th grade group. Most of these future dropouts no doubt reported, like the other dropouts in the sample, that they expected to complete high school, so their inclusion in the analysis would increase the failure rate, especially when expectations are controlled.

Minority males are less likely to meet their goals than are other groups, but once level of expectations are controlled, the coefficient for black males becomes insignificant. The coefficient for Hispanic males is reduced, but remains substantial and significant. There is no difference between white males and any of the female groups.

Despite their influence on other coefficients in the models, there are no significant differences in success for the various educational expectations dummy variables. Expectations appear to mediate the relationship of social influences on attainment.

College students. College students are a much more homogeneous group than high school students. All youth in this category have shown a positive orientation toward education and all have completed at least high school.

As with high school students, due to the relatively short period of time under investigation, students with lower educational expectations are more likely to have left school by 1982 than are those with very high expectations (Table 4.9). Adding expectations to the model does not have the pervasive effect on other variables which was seen in the analysis for high school students. Parent's education is not significant in any of the equations, probably due to the restriction of the sample to those who have made a commitment to education, either because or in spite of parental influence.

Age, 1979 educational attainment, and 1979 educational expectations all have significant effects on success in meeting the 1979 educational goals.

Table 4.9 Probit of Success in Meeting 1979 Educational Goals for Youth Who Were College Students in 1979

	A		B		C	
Predictors	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean
Constant	1.111 (0.79)[a]		-0.931 (-0.58)		-0.504 (-0.30)	
Age	-0.104 (-1.78)	-.036	-0.151 (-2.25)*	-.045	-0.175 (-2.49)*	-.051
Parent's education						
High school dropout	-0.138 (-0.85)	-.048	-0.187 (-1.01)	-.056	-0.154 (-0.82)	-.045
High school graduate	--	--	--	--	--	--
College	-0.480 (-0.47)	-.017	.127 (1.05)	.038	0.113 (0.91)	.033
Lived with both parents at age 14	0.204 (1.16)	.071	.096 (0.65)	.029	0.077 (0.50)	.022
Number of siblings	0.043 (1.91)	.015	.046 (1.81)	.014	0.043 (1.64)	.012
Race and sex						
Black male	-0.744 (-3.18)*	-.259	-0.835 (-3.01)*	-.248	-0.761 (-2.68)*	-.221
Hispanic male	-0.317 (-1.43)	-.110	-0.343 (-1.30)	-.102	-0.248 (-0.94)	-.072
White male	--	--	--	--	--	--
Black female	0.014 (0.01)	.005	0.232 (0.18)	.069	0.366 (0.27)	.107
Hispanic female	0.293 (0.26)	.102	0.362 (0.27)	.108	0.647 (0.48)	.188
White female	0.525 (0.46)	.182	0.865 (0.66)	.257	0.923 (0.68)	.269
Sex-role traditionality	0.005 (0.19)	.002	-0.046 (-1.50)	-.014	-0.056 (-1.75)	-.016
Self-esteem	-0.022 (-1.13)	-.008	0.002 (0.07)	.001	0.006 (0.27)	.002
Number of children desired	-0.009 (-0.25)	-.003	-0.022 (-0.53)	-.006	-0.028 (-0.65)	-.008

Table 4.9 Continued

Predictors	A		B		C	
	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean
Sex interactions with^{b}:						
Sex-role traditionality	-0.001 (-0.03)	-.0004	0.046 (0.95)	.014	0.064 (1.28)	.019
Self-esteem	0.011 (0.36)	.004	0.007 (0.19)	.002	.005 (0.14)	.001
Number of children desired	-0.003 (-0.05)	-.001	-0.012 (-0.14)	-.004	-.020 (-0.23)	-.006
Educational attainment						
12 yrs.	--	--	--	--	--	--
13 yrs.	0.696 (4.88)*	.242	1.235 (6.92)*	.367	1.192 (6.54)*	.347
14 yrs.	0.953 (5.54)*	.331	2.007 (8.92)*	.597	1.951 (8.47)*	.568
15 or more yrs.	0.887 (4.37)*	.308	2.566 (9.34)*	.763	2.555 (9.06)*	.743
Educational expectations						
13-15 yrs.	--	--	3.031 (13.21)*	.902	3.319 (13.54)*	.966
16 yrs.	--	--	2.041 (12.65)*	.607	2.182 (12.96)*	.635
17 or more yrs.	--	--	--	--	--	--
Lived with parents, 1979	--	--	--	--	-0.634 (-4.76)*	-.184
Live with parents, 1982	--	--	--	--	0.204 (1.49)	.059
Married, spouse present, 1979	--	--	--	--	-0.372 (-1.06)	-.108
Married, spouse present, 1982	--	--	--	--	0.138 (1.00)	.040
Ever had a child, 1979	--	--	--	--	-0.245 (-0.54)	-.071

Table 4.9 Continued

Predictors	A Maximum likelihood estimate	 Partials, evaluated at mean	B Maximum likelihood estimate	 Partials, evaluated at mean	C Maximum likelihood estimate	 Partials, evaluated at mean
Ever had a child, 1982	--	--	--	--	-0.075 (-0.40)	-.022
-2 * log likelihood ratio	98.38		387.88		413.03	
N	888		888		888	

[a] Number in parentheses is the estimate divided by the standard error.

[b] For interaction terms, sex is coded male equals 1.

UNIVERSE: Civilian college students in 1979, interviewed in 1982.

Youth who were further along in college in 1979 are more likely to have succeeded by 1982. The coefficient for age is negative, and the effect is stronger when expectations are entered into the equation, suggesting that youth who are older than their classmates may face a more difficult time in completing their schooling. The higher the educational expectation, the less the likelihood of successful completion, although this is distorted by the fact that most of those who expected to complete a graduate degree have not yet had time to finish.

By and large the adult role indicators were not related to completion of educational goals. Youth who lived with their parents in 1979 were less likely to have succeeded, but the coefficient for living with parents in 1982 was not significant and in the opposite direction.

All other things equal, young black men are less likely than white men to meet their educational goals. As with high school students, there were no substantial coefficients for young women of any race. The coefficient for Hispanic men was negative, but not significant. The significant negative coefficient for black men was reduced only slightly by the addition of educational expectations and role transitions to the equation.

Out of school youth. In many ways, this is the most diverse group of all. The success variable represents youth who have returned to school after leaving, primarily those who finish high school or finish a college degree.

The number of siblings, a variable representing resources available to each child, is significant only for this out-of-school universe (Table 4.10). The larger the family, the less likely the youth is to be able to meet the educational goal. None of the other indicators of family background are significant.

Youth who have only a high school diploma appear to be somewhat less

Table 4.10 Probit of Success in Meeting 1979 Educational Goals for Youth Who Were Out of School in 1979

	A		B		C	
Predictors	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean
Constant	-2.034 (-1.99)[a]		-2.246 (-2.15)*		-2.221 (-1.98)	
Age	-0.045 (-1.41)	-.005	-0.046 (-1.38)	-.004	-0.045 (-1.19)	-.004
Parent's education						
High school dropout	-0.111 (-0.94)	-.011	-0.130 (-1.07)	-.012	-0.138 (-1.12)	-.012
High school graduate	--	--	--	--	--	--
College	0.214 (1.49)	.022	0.255 (1.71)	.023	0.221 (1.46)	.019
Lived with both parents at age 14	0.089 (0.85)	.009	0.098 (0.90)	.009	0.115 (1.03)	.010
Number of siblings	-0.050 (-2.56)*	-.005	-0.049 (-2.45)*	-.004	-0.048 (-2.39)*	-.004
Race and sex						
Black male	0.114 (0.67)	.012	0.161 (0.90)	.014	0.155 (0.84)	.013
Hispanic male	-0.101 (-0.45)	-.010	-0.007 (-0.03)	-.001	0.017 (0.07)	.001
White male	--	--	--	--	--	--
Black female	1.145 (1.06)	.116	1.297 (1.16)	.116	1.610 (1.41)	.137
Hispanic female	1.179 (1.10)	.120	1.447 (1.30)	.130	1.798 (1.58)	.153
White female	1.300 (1.21)	.132	1.466 (1.33)	.131	1.794 (1.59)	.153
Sex-role Traditionality	-0.024 (-0.94)	-.002	-0.032 (-1.20)	-.003	-0.032 (-1.17)	-.003
Self-esteem	-0.003 (-0.16)	-.0003	-0.0003 (-0.01)	-.00002	-0.004 (-0.19)	-.0003
Number of children desired	0.005 (0.11)	.001	0.015 (0.32)	.001	0.026 (0.54)	.002

Table 4.10 Continued

	A		B		C	
Predictors	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean
Sex interactions with[b]:						
Sex-role traditionality	-0.009 (-0.23)	-.001	-0.002 (-0.04)	-.0001	0.002 (0.04)	.0002
Self-esteem	-0.040 (1.41)	.004	0.044 (1.48)	.004	0.052 (1.72)	.004
Number of children desired	0.0003 (0.004)	.00003	-0.020 (-0.27)	-.002	-0.026 (-0.36)	-.002
Educational attainment						
Less than 12 yrs.	1.049 (6.87)*	.107	-0.252 (-0.66)	-.023	-0.218 (-0.56)	-.019
12 yrs.	--	--	--	--	--	--
13 or more yrs.	0.423 (2.06)*	.043	0.409 (1.98)	.037	0.401 (1.89)	.034
Educational expectations						
Less than 12 yrs.	--	--	1.067 (2.63)*	.096	1.133 (2.76)*	.097
12 yrs.	--	--	1.503 (4.09)*	.135	1.527 (4.11)*	.130
13 or more yrs.	--	--	--	--	--	--
Lived with parents, 1979	--	--	--	--	-0.103 (-0.74)	-.009
Live with parents, 1982	--	--	--	--	-0.115 (-0.91)	-.010
Married, spouse present, 1979	--	--	--	--	-0.216 (-1.23)	-.018
Married, spouse present, 1982	--	--	--	--	-0.097 (-0.71)	-.008
Ever had a child, 1979	--	--	--	--	0.116 (0.66)	.010
Ever had a child, 1982	--	--	--	--	-0.317 (-2.06)*	-.027

Table 4.10 Continued

Predictors	A		B		C	
	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean	Maximum likelihood estimate	Partials, evaluated at mean
% of wks employed between 1979 and 1982 interview dates	--	--	--	--	-0.001 (-0.37)	-.0001
% of wks unemployed between 1979 and 1982 interview dates	--	--	--	--	-0.0001 (-0.05)	-.00001
-2 * log likelihood ratio	85.55		124.03		134.07	
N	1685		1685		1685	

[a] Number in parentheses is the estimate divided by the standard error.

[b] For interaction terms, sex is coded male equals 1.

UNIVERSE: Out of school civilians in 1979, interviewed in 1982.

likely than either dropouts or those with some college to increase their education. As usual, the lower the level of educational expectation, the more likely the youth is to be able to attain it.

Parenthood decreases the probability of meeting the early educational goal. None of the other role transition indicators make any substantial difference. In particular, employment history is not associated with successful completion of the expected education. Nor is race a factor in any of the specifications. All in all, the model does not predict well for the return to school of out-of-school youth.

Change in Educational Attainment, 1979 to 1982

Over the three years from the spring of 1979 to the spring of 1982, the in-school groups acquired on the average about 2 years of education, while the out-of-school youth gained on average about 2 months. That is, a substantial portion of the in-school groups stayed in school the entire time, while a substantial proportion of the out-of-school group stayed out of school.

Tables 4.11 through 4.13 show the results of applying the multivariate model to the three universes. For each, age is negatively related to years of school acquired, probably because older youth were closer to finishing their degrees. For other factors, differences appear between out-of-school and in-school youth.

For both high school and college students, coming from an intact family and having well-educated parents were associated with getting more education. The effect of family size was negative, as expected, but fairly small. Educational expectations were very strongly associated with educational attainment. At all levels, youth who expected less education got less education.

In general, it appears that family formation interferes with education.

Table 4.11 Regression Analysis of Change in Educational Attainment Among Youth in High School in 1979.

Independent variables	A coefficient (t-value)	B coefficient (t-value)
Age	-.222 (-11.80)**	-.204 (-10.93)**
Parent's education		
High school dropout	-.118 (-2.71)**	-.089 (-2.08)*
High school graduate	--	--
College	.187 (5.26)**	.142 (4.04)**
Lived with both parents at age 14	.153 (4.13)**	.150 (4.11)**
Number of siblings	-.014 (-1.86)+	-.014 (-1.90)+
Race and sex		
Black male	-.061 (-0.96)	-.036 (-0.58)
Hispanic male	-.115 (-1.23)	-.083 (-0.91)
White male	--	--
Black female	-.089 (-0.26)	.051 (0.15)
Hispanic female	-.244 (-0.70)	-.091 (-0.27)
White female	-.166 (-0.50)	-.073 (-0.22)
Sex-role traditionality	-.001 (-0.07)	.008 (0.93)
Self-esteem	.011 (1.62)	.009 (1.40)
Number of children desired	.004 (0.25)	.007 (0.52)
Sex interactions with[a]:		
Sex-role traditionality	-.003 (-0.26)	-.012 (-1.10)
Self-esteem	-.007 (-0.78)	-.003 (-0.30)
Number of children desired	.021 (1.05)	.014 (0.72)

Table 4.11 Continued

Independent variables	A coefficient (t-value)	B coefficient (t-value)
Educational expectations		
Less than 12 years	-1.160 (-6.82)**	-1.019 (-6.10)**
12 years	-.878 (-23.05)**	-.792 (-20.67)**
13-15 years	-.480 (-11.26)**	-.432 (-10.26)**
16 or more years	--	--
Lived with parents, 1979	--	-.146 (-1.03)
Lived with parents, 1982	--	-.121 (-3.73)**
Married, spouse present, 1979	--	-.010 (-0.05)
Married, spouse present, 1982	--	-.333 (-6.37)**
Ever had a child, 1979	--	-.075 (-0.62)
Ever had a child, 1982		-.306 (-5.36)**
Constant	5.957 (14.76)**	5.807 (13.28)**
R^2	.363	.392
F	70.20	60.40
N	2309	2304

UNIVERSE: Civilian high school students in 1979, interviewed in 1982.

[a] Male equals one for sex interactions.

**Significant at the 1 percent level.

*Significant at the 5 percent level.

+Significant at the 10 percent level.

Table 4.12 Regression Analysis of Change in Educational Attainment for Youth in College in 1979

Independent variables	A	B
	coefficient (t-value)	coefficient (t-value)
Age	-.272	-.271
	(-12.80)**	(-12.87)**
Parent's education		
High school dropout	.036	.035
	(0.36)	(0.36)
High school graduate	--	--
College	.201	.135
	(3.62)**	(2.50)*
Lived with both parents at age 14	.237	.201
	(3.36)**	(2.93)**
Number of siblings	-.009	-.002
	(-0.64)	(-0.15)
Race and sex		
Black male	-.427	-.331
	(-3.29)**	(-2.60)**
Hispanic male	-.264	-.178
	(-1.50)	(-1.05)
White male	--	--
Black female	.381	.299
	(0.63)	(0.52)
Hispanic female	.369	.265
	(0.60)	(0.45)
White female	.545	.367
	(0.91)	(0.64)
Sex-role traditionality	-.008	.005
	(-0.56)	(0.37)
Self-esteem	.016	.019
	(1.44)	(1.76)+
Number of children desired	.040	.027
	(1.79)+	(1.27)
Sex interactions with[a]:		
Sex-role traditionality	.009	.001
	(0.44)	(0.06)
Self-esteem	.017	.013
	(1.04)	(0.81)
Number of children desired	-.002	-.0001
	(-0.04)	(-0.00)

Table 4.12 Continued

Independent variables	A coefficient (t-value)	B coefficient (t-value)
Educational expectations		
13-15 years	-.929 (-11.02)**	-.747 (-9.01)**
16 years	-.150 (-2.75)**	-.126 (-2.38)*
17 or more years	--	--
Lived with parents, 1979	--	-.449 (-8.55)**
Lived with parents, 1982	--	-.038 (-0.65)
Married, spouse present, 1979	--	.016 (0.09)
Married, spouse present, 1982	--	-.223 (-3.20)**
Ever had a child, 1979	--	.155 (0.69)
Ever had a child, 1982	--	-.435 (-4.30)**
Constant	5.942 (9.97)**	6.232 (10.64)**
R^2	.189	.249
F	20.02	21.29
N	1472	1471

UNIVERSE: Civilian high school students in 1979, interviewed in 1982.

[a] Male equals one for sex interactions.

**Significant at the 1 percent level.

*Significant at the 5 percent level.

+Significant at the 10 percent level.

Table 4.13 Regression Analysis of Change in Education Among Youth Out of School in 1979

Independent variables	A	B
	coefficient (t-value)	coefficient (t-value)
Age	-.055 (-8.53)**	-.052 (-7.26)**
Parent's education		
High school dropout	-.004 (-0.16)	-.0003 (-0.01)
High school graduate	--	--
College	.121 (4.74)**	.120 (4.60)**
Lived with both parents at age 14	-.064 (-2.95)**	-.050 (-2.22)*
Number of siblings	-.008 (-2.11)*	-.010 (-2.48)*
Race and sex		
Black male	.059 (1.43)	.050 (1.17)
Hispanic male	.125 (2.21)*	.092 (1.56)
White male	--	--
Black female	-.355 (-1.73)+	-.379 (-1.79)+
Hispanic female	-.418 (-2.01)*	-.403 (-1.89)+
White female	-.422 (-2.07)*	-.410 (1.96)*
Sex-role traditionality	-.007 (-1.54)	-.011 (-2.29)*
Self-esteem	.005 (1.39)	.007 (1.89)+
Number of children desired	.022 (2.32)*	.024 (2.55)*
Sex interactions with[a]:		
Sex-role traditionality	-.004 (-0.55)	.003 (0.45)
Self-esteem	-.011 (-2.02)*	-.013 (-2.26)*
Number of children desired	-.017 (-1.21)	-.012 (-0.84)

Table 4.13 Continued

Independent variables	A coefficient (t-value)	B coefficient (t-value)
Educational expectations		
Less than 12 years	-.055 (-1.66)+	-.067 (-1.94)+
12 years	-.089 (-4.17)**	-.082 (-3.72)**
13 or more years	--	--
Lived with parents, 1979	--	-.042 (-1.63)
Lived with parents, 1982	--	-.066 (-2.65)**
Married, spouse present, 1979	--	-.014 (-0.45)
Married, spouse present, 1982		-.089 (-3.60)**
Ever had a child, 1979		.028 (0.89)
Ever had a child, 1982		-.075 (-2.66)**
Percent of weeks employed between 1979 and 1982 interview dates	--	-.002 (-5.27)**
Percent of weeks unemployed between 1979 and 1982 interview dates	--	-.001 (-0.77)
Constant	1.647 (8.39)**	1.790 (8.45)**
R^2	.040	.058
F	9.44	9.04
N	3621	3413

UNIVERSE: Out-of-school civilians in 1979, interviewed in 1982.

[a] Male equals one for sex interactions.
** Significant at the 1 percent level.
* Significant at the 5 percent level.
+ Significant at the 10 percent level.

For both high school and college students, getting married or having children were associated with lower levels of attainment. The effect of living away from parents, however, was quite different for the two groups. Very few high school students were living away from their parents in 1979, and the coefficient is non-significant. Those high school youth who were still living at home in 1982, however, had acquired significantly less education than their counterparts. In contrast, for college students, living at home in 1982 was insignificant. However, college students living at home at the time of the 1979 interview reported getting less education than did youth living away from parents. The difference in pattern no doubt reflects age-graded differences in reasons for living with parents. Almost all high school students were living at home in 1979. Three years later, the high school students were at approximately the same stage as the college students in 1979. Living at home while in college may be an indicator of lack of resources by the student and family, so that remaining in school is harder for these youth.

There are no race or sex effects, ceteris paribus, on grade attainment among high school youth. Black college males, on the other hand, acquired significantly less education than did white college males. The effect attenuates, but remains significant, if life cycle transitions are controlled.

The patterns for the out-of-school youth are somewhat different than the patterns for the students. Parent's education is, again, positively associated with educational acquisition. However, youth from intact families tended to get less education than did youth from broken homes. Also, coming from a larger family was associated with lower levels of education.

Sex-role attitudes are important for the out-of-school group, although the direction of the effect is inconsistent. More traditional youth reported getting less education, although the relationship is significant only when life-cycle transitions are included in the analysis. Number of children desired, hypothesized to be a measure of orientation to the home, was positively associated with acquiring education, contrary to expectations.

Educational expectations are positively and very significantly related to acquiring education. Out-of-school youth expecting to complete a high school education and no more show less increase in attainment than do dropouts or youth with college expectations.

Indicators of life-cycle stage in 1982 are probably the most important predictors of educational acquisition among out-of-school youth. Youth who had moved out of their family home, married, or had children by 1982 all reported less increase in education than did their counterparts.

The hypothesized relationship between labor market success and education is only partly supported. Youth who were employed for a larger percent of the period between the 1979 and 1982 interviews reported significantly less change in their educational level than did those who worked less. However, there was no relationship between educational change and being unemployed. The relationship between time working and education may be somewhat tautological, reflecting mainly periods spent out of the labor force while going to school.

Finally, compared with white males, women of all races report less change in education. The contrast is greatest for white females. The coefficients for minority men, on the other hand, are positive but not significant.

The differences in patterns between those in school in 1979 and those out of school in 1979 are probably attributable to the high school dropouts who go on to complete a diploma or GED. The dropouts would account for the inverse relationship with family intactness and expected family size. Women are more likely to be high school graduates than men, and the high school graduates tend not to increase their education, perhaps accounting for the relatively small amount of additional education reported by women in this group.

V. CONCLUSIONS

One of the most striking patterns in these results is the high levels of education youth say that they expect to get. Apparently, the norms which support education as a means of advancement and personal growth are nearly universally accepted by American youth. Educational orientation, at least as measured by educational expectations, is fairly stable, and appears to be predictive of actual attainment.

The cross-tabular analysis shows systematic differences in both expectations and attainment by race and sex, although to a large extent these differences were reduced by the controls used in the multivariate model. With all else controlled, however, significant differences remain between white males and minority males in their success at attaining educational goals, at least among youth who were still in school as of 1979.

The lack of race or sex differences in educational attainment among the out-of-school sample when the multivariate model was applied probably reflects the route by which the youth left school in the first place. Youth who dropped out of school may feel the most pressure to increase their educational levels, either from family or potential employers, or from their own unmet aspirations for the certification provided by the high school degree. Because the population of high school dropouts is disproportionately black and Hispanic, minorities should be more likely than whites to report increased education.

Minorities are more likely than whites to report financial problems or taking a job as reasons for leaving school. This probably reflects the persistent differences in income between ethnic groups, and indicates that even the financial aid programs targeted to minorities have not eliminated money as a barrier to education. This conclusion must be made cautiously, because some of the youth who report that they left to work may have been drawn out of school by the lure of offered employment, rather than forced out by lack of funds.

Sex differences in educational attainment and education become more pronounced at higher levels of schooling. Whereas young women are less likely to drop out of school than are young men, among youth who have actually started college, men have the higher expectations. The tables suggest that two-year programs may be playing an important role for young women, since they seem to be more likely both to expect and attain 14 years of schooling.

Family formation seems to be a major factor in reducing the amount of education young people get. Taking on the responsibility for marriage or for childrearing both takes up time and increases demand for income, both factors working against continued education.

The emphasis on education among young people is shown by the relatively small reduction in the gap between 1982 attainment and expectations measured between 1979 and 1982. Even among the out-of-school sample, most of the youth who had failed to reach their 1979 goal retained their expectations for increasing their education. Some of these youth may yet succeed, as shown by the ten percent of the group initially out of school who were enrolled in 1982. The desire for education seems widespread and persistent among young people.

Appendix Table 4A.1 Means and Standard Deviations of Variables used in Regression Analyses

Variable	High School Students		College Students		Out of School	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Change in educational attainment between 1979 and 1982 interview dates	2.05	.90	1.82	1.05	0.18	0.57
Age, 1979	16.96	0.81	19.60	1.20	19.61	1.45
Parent's education						
High school dropout	0.19	0.39	0.08	0.28	0.31	0.46
High school graduate	--	--	--	--	--	--
College	0.38	0.49	0.59	0.49	0.20	0.40
Lived with both parents at age 14	0.77	0.42	0.85	0.36	0.73	0.44
Number of siblings	3.16	2.12	2.80	1.97	3.76	2.49
Race and sex						
Black male	0.07	0.26	0.04	0.20	0.06	0.24
Hispanic male	0.03	0.17	0.02	0.14	0.03	0.17
White male	--	--	--	--	--	--
Black female	0.07	0.26	0.06	0.24	0.07	0.26
Hispanic female	0.02	0.15	0.02	0.15	0.04	0.19
White female	0.40	0.49	0.41	0.49	0.43	0.49
Sex-role traditionality	10.82	2.76	9.91	2.44	11.28	2.82
Self-esteem	31.19	3.24	32.67	3.13	30.77	3.41
Number of children desired	2.48	1.52	2.50	1.41	2.42	1.37
Sex interactions with[a]:						
Sex-role traditionality	5.88	6.11	5.30	5.47	5.56	6.27
Self-esteem	15.83	15.83	16.63	16.54	14.29	15.56
Number of children desired	1.23	1.63	1.20	1.44	1.10	1.50

Appendix Table 4A.1 Continued

Variable	High School Students		College Students		Out of School	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Educational expectations (high school students)						
Less than 12 years	0.01	0.09	--	--	--	--
12 years	0.37	0.48	--	--	--	--
13-15 years	0.18	0.39	--	--	--	--
16 or more years	--	--	--	--	--	--
(College students)						
13-15 years	--	--	0.13	0.33	--	--
16 years	--	--	0.48	0.50	--	--
17 or more years	--	--	--	--	--	--
(Out of school)						
Less than 12 years	--	--	--	--	0.13	0.34
12 years	--	--	--	--	0.49	0.50
13 or more years	--	--	--	--	--	--
Lived with parents, 1979	0.99	0.12	0.47	0.50	0.58	0.49
Lived with parents, 1982	0.51	0.50	0.32	0.47	0.30	0.46
Married, spouse present, 1979	0.07	0.09	0.02	0.14	0.25	0.43
Married, spouse present, 1982	0.14	0.35	0.20	0.40	0.43	0.49
Ever had a child, 1979	0.02	0.13	0.01	0.12	0.22	0.42
Ever had a child, 1982	0.12	0.32	0.09	0.29	0.41	0.49
Percent of weeks employed between 1979 and 1982 interview dates	--	--	--	--	68.22	33.10
Percent of weeks unemployed between 1979 and 1982 interview dates	--	--	--	--	12.93	19.02

[a] Male equals one for sex interactions.

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CHAPTER 5

LONG TERM OUTCOMES OF GOVERNMENT-SUBSIDIZED EMPLOYMENT AND TRAINING PROGRAMS

JOAN E. CROWLEY

The purpose of this chapter is to provide an overall evaluation of the effects of the government employment and training programs on youth in the United States, using the extensive information on program participation and economic outcomes available from the first four waves of the NLS. The analysis will also explore whether some general types of services were more effective than other services.

Overview of government employment and training programs

Government employment and training programs attempt to provide opportunities for successful participation in the labor force by individuals who for one reason or another have had difficulties in finding and keeping adequate employment. The specific designs of the various programs reflect current assumptions about why some individuals are not successful. Some of the earliest programs were started during the depression in the 1930s, when the problem was seen as simply not enough jobs to go around. The federal government therefore created jobs through such mechanisms as the Civilian Conservation Corps and the Works Projects Administration. These job creation programs have more recently taken the form of Public Service Employment and the Summer Youth Employment Programs of the CETA agencies.

In times of relatively low unemployment, the employment problem has been seen as caused by the lack of appropriate skills of job seekers for available jobs. Programs designed to address the skills problem focus on training individuals, using a variety of mechanisms ranging from classroom training and job counseling through placement in subsidized employment. The goal is to alleviate structural unemployment by providing hard-to-employ individuals with remedial training or experience designed to make the participants more attractive to employers.

From 1972 to 1982, the major government employment and training program was CETA, the Comprehensive Employment and Training Act. CETA was a block grant program, under which local governments were to provide a range of employment-related services, ranging from funding subsidized jobs to classroom training in specific job skills and basic education. In 1982, CETA was superceded by the Jobs Training Partnership Act, which continues many of the training activities developed under CETA and which stresses participation by representatives of the private sector in designing training services. Direct subsidized employment, however, will not be part of the new program.

The other major source of government-subsidized employment and training is the WIN (Work Incentive) program for AFDC recipients. Under WIN, all AFDC recipients deemed able to work are required to register for employment services. Welfare recipients were also a major target group for CETA, and referral to CETA was one component of potential WIN services.

For most of the history of the CETA program, youth were a special concern. Unemployment rates for teenagers of all races are consistently higher than adult unemployment rates, and unemployment rates for black teenagers are running at approximately 50 percent in the early 1980's. Some of this unemployment is short term job-hopping, to be expected while youth explore the labor market before settling down, but there is evidence that long-term youth unemployment can have lasting effects on the ability of young adults to provide for themselves and their families in later life (National Commission for Employment Policy, 1981, p. 48). One goal, then, of government-subsidized employment and training programs is to facilitate the transition to work of youth who are at risk for employment problems. The groups identified as most at risk are those from economically disadvantaged families, who may not have the resources to obtain sufficient education or vocational training on their own; and minority and handicapped youth, who face additional barriers to employment based on discrimination of various types.

The special concern of the Federal government for youth entering the labor market was reflected in the Youth Employment and Demonstration Projects Act of 1977, which established special training and employment programs for individuals age 21 and under. These programs were in addition to the summer youth programs, which had provided subsidized summer employment for thousands of young people annually since the initial CETA authorization in 1972.

Implementation issues

CETA was designed to be administered by local agencies (prime sponsors), which were expected to be able to tailor their programs to meet local conditions while meeting standards set by the U. S. Department of Labor (DOL). The DOL retained accountability for seeing that the services were delivered and the money was spent in keeping with the provisions of the authorizing legislation. Each prime sponsor was responsible for determining which target groups in the local population were most in need of employment and training services, which services were most appropriate for each participant, and which skills were most likely to be in demand in the local labor market. In FY 1978, 450 different prime sponsors had responsibility for delivering services funded under CETA (U. S. Department of Labor, 1979).

As with CETA, the actual delivery of WIN services was decentralized, with special units set up within each area. Since the range of services provided under CETA and WIN were quite similar, in some cases there was close cooperation between agencies in serving welfare recipients. In other cases, the systems operated quite separately.

The decentralization of the service delivery systems meant that nationwide there were wide variations in the quality and variety of services delivered and in the characteristics of program participants. Many evaluations have focused on the effectiveness of specific programs in specific locations (Hahn, 1980). Some prime sponsors have run very good intervention programs, with highly positive outcomes for their participants. Others may have run ineffective programs. For efficient use of federal funds, the intervention must be "operator-robust," that is, capable of being delivered as intended, regardless of the specific persons responsible for its delivery (cf. Chen and Rossi, 1983). The NLS Youth Survey was designed to look at the effects of the federal employment and training effort across all types of participants and all service delivery systems. The question addressed here is whether, across all variations, young people who participated in government employment and training programs are better or worse off than they would have been without the programs.

One of the problems with such an evaluation is determining precisely what has been evaluated. Decentralization allowed a very wide range of discretion to local agencies in administering services. Job counseling, for example, might range from simply a pep talk about going out and searching for a job to a comprehensive evaluation of the individual's aptitudes and interests followed by intensive personal interviewing to determine and overcome barriers to job search or job retention. Some CETA offices provided services themselves; others contracted with local agencies for programs. Although a large scale survey such as the NLS could not be expected to adequately measure the *quality* of services received, indicators of general *types* of services received are available.

Data from the four waves of the NLS Youth cohort will be used to explore two major questions. First, how effective are the programs over all, and are they particularly effective (or ineffective) for certain types of participants? Second, are some types of services more associated with positive outcomes to participation than are others? Several possible outcomes will be explored to see how well program participants are doing in terms of employment, income, and education relative to their otherwise comparable peers who did not spend time in these programs.

Evaluation Strategy

The NLS was designed to oversample groups targeted for services--minorities and the economically disadvantaged. As expected, the sample included a substantial number of youth who reported having participated in government employment and training programs. Note that both the participants and non-participants were selected into the NLS by the same sampling procedure. By judicious selection of control variables, it should be possible to establish comparisons between participants and non-participants which will represent program effects, relatively free from selection bias problems usually encountered in non-experimental designs.

By capitalizing on the panel design of the NLS, we avoid some of the worst problems of causal estimation. Characteristics of individuals can be measured both before and after participation. Measuring program participation and outcomes like employment and education for the same time period can be misleading, because the amount of employment or education reported by the participants may actually be services provided by the programs. Restricting the measure of weeks worked to unsubsidized weeks worked is no more satisfactory, because youth leaving subsidized jobs may take a few weeks to find suitable unsubsidized employment, artificially putting themselves at an apparent disadvantage compared to control group youth who did not change employers.

To clarify these ambiguities, calendar year 1981 is established as the outcome year and youth who were enrolled in programs during January of 1981 are excluded from the sample. Some previous participants may re-enroll in programs in 1981, but we know that, as of the beginning of the outcome year, time in the labor force or in school for both our participant group and our non-participants were being accrued without government support.

Comparisons between participants and non-participants are made separately based on participation during each calendar year 1978 through 1980. Calendar years are used because income and earnings are available for calendar year periods. The participant group for each year is defined simply in terms of whether the individual reported having been in a government-subsidized employment and training program at any time during the year, regardless of prior or subsequent participation. Youth who were in programs which overlapped from one year to the next were counted as participants in both years.

The income distribution of participants is truncated because few affluent youth would be selected for programs even if they applied.[1] Since income and associated variables are critical to the analysis, both in terms of determining who would participate in programs and in determining values of the outcome variables, both participant and non-participant groups are limited to those who are at or below the lower living standard level or the poverty level for their family size and their area, or whose families received welfare for the participation year being analyzed.

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[1] Technically, affluent youth could be enrolled in training programs, either through experimental programs designed to assess the impact of different client mixes or by falling into other groups targeted for service, such as high school dropouts or the physically handicapped. In practice, however, the number of such participants was extremely low (Hahn, 1980).

The effects of time are confounded in the analysis of government-subsidized employment and training programs, particularly those funded by CETA, because the programs themselves changed substantially over the period of the evaluation. The 1978 reauthorization act made many new provisions for targeting services toward the very hard to employ. At the same time, the YEDPA programs were being implemented. As expected, during the first year there was a great deal of variation in the degree to which prime sponsors had developed their youth services. By the second year, substantial improvements had been made in the quality of the worksites to which young people were assigned (Hahn, 1980). It is quite possible that differences in effectiveness between 1978 and later years might be due to changes in the programs themselves. To some extent, controls for type of service received may help to control for programmatic changes, but the problem cannot be entirely solved with the available data.

Outcome Variables

Outcomes selected for the evaluation fall into three main groups: indicators of the quality and quantity of employment, indicators of educational attainment, and indicators of welfare dependency. The most detailed measures are available for employment. Indicators of whether the respondent held a subsidized job in the outcome year, annual earnings, hourly rate of pay at the 1982 interview date, and job satisfaction will be used.

One of the explicit goals of youth programs is to encourage young people to stay in school, or to return to school if the youth has dropped out. Thus, school enrollment status and whether the respondent has received a high school diploma or GED are important outcome measures.

Finally, one of the major goals of government employment and training programs is to reduce the number of people dependent on welfare. We will measure the amount of welfare received by participants and their families, and whether or not they were on welfare at any time in 1981.

Models of program effectiveness

The general approach will be to consider that the outcomes are a function of human capital, family socioeconomic background, respondent demographic characteristics, characteristics of the local labor market, and the respondent's current life cycle stage. When these factors are controlled, measures of program participation should represent differences due to the programs, rather than to the factors which lead to program enrollment.

As noted above, by lagging education and employment for one year where possible, we avoid confounding them with program services. Measurement of education is further complicated by the extremely close correlation of age and grade, especially during the high school years. To reduce such multicollinearity yet maintain crucial information on educational attainment, we replace highest grade completed with a series of dummy variables indicating whether the respondent was enrolled in high school, enrolled in college, a high school dropout, or a high school graduate not enrolled in school.

Family background variables include measures of parental education and presence of reading materials in the home as indicators of social class and orientation toward learning. Measures of family structure--number of siblings and whether the respondent at age 14 was living with both natural parents, with the mother only, or in some other arrangement--give some indication of the resources available to the youth. Family poverty status and welfare receipt for the participation year will also be included in the analysis.

Clearly, youth in areas where jobs are scarce are less likely to find employment than youth in areas where jobs are plentiful. At the same time, problems in obtaining employment should make it more likely that youth will turn to government programs for assistance. Region of residence, particularly the distinction between the South and other areas, is also associated with employment patterns for youth (O'Neill, 1983). The models will therefore control for region of the country, whether or not the youth lived in a SMSA, and the local unemployment rate.

Finally, certain characteristics of the respondents should be associated with the outcome variables. Ability and self-concept have been found to be associated with educational attainment (Morgan, et al., 1979; Bohrnstedt and Felson, 1983). Youth who are still living at home with their parents should have less need for earnings than independent youth.

Sex and race effects are expected to permeate the analysis. The differences in occupational distributions between men and women are striking, as are gender differences in the implications for work of life cycle stages. For young men, marriage and parenthood should similarly serve as incentives to seek stable and well paying jobs. For women, although there has been a large increase in the likelihood of both married women and mothers to be working in the paid labor market, marriage and parenthood may serve as alternatives to employment, rather than as incentives. Since so many factors are expected to differ qualitatively in their influence on women relative to their influence on men, the equations will be run separately by sex (cf. Mallar, et al., 1980). Race, too, has pervasive effects on likelihood of employment; however, due to sample size, it is not feasible to show results by race. This shortcoming may not be too serious, because race should not make the qualitative difference in the equations that is associated with gender.

Provided that the differences between the participants and the non-participants have been properly specified, program effects should be measureable. The relative effectiveness of various types of service will be assessed using dummy variables indicating whether the respondent received one of five services: subsidized employment, classroom training for skills, basic education, job counseling, and a residual category of other services.[2]

For 1979 and 1980, employment and educational status for the preceding calendar year are available, and these lagged variables provide an important set of controls for equating participants with non-participants. For 1978, these lagged measures are not available. Rather than leave 1978 out of the analysis altogether, the models for 1979 and 1980 will be run twice, once with and once without the lagged employment and education variables. Because enrollment status is one of the participant characteristics used in the assessment of program effectiveness, the models without lagged variables will be run including enrollment status as of the interview date.

All of the tables present results from OLS regressions. Several of the outcome variables are dichotomous and thus most appropriately analyzed using probit analyses. Both techniques were applied, and the results were substantially similar, so regression results are shown to keep the presentation consistent across the various outcomes.

The tables presented for discussion below will show only the coefficients directly bearing on the question of program effectiveness. The appendix provides tables for the complete models and for means on the variables for each of the calendar year universes.

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[2] Other services generally involve helping participants solve logistical problems which might prevent them from getting or keeping jobs. Examples are transportation, medical care, and child care. The set of explicit probes used to elicit reports of such support services was lengthened after the 1979 interview to include receipt of meals or lodging. The change in interview format led to higher proportions of program participants reporting receipt of support services in the years after 1979.

I. RESULTS

Employment Outcomes for Males

Employment outcomes for men. There were no significant relationships between annual earnings or hourly rate of pay for 1981 and program services for any year (Tables 5.1 and 5.2). However, it does appear that youth who enter subsidized employment in one year are likely to return to subsidized employment the following year (Table 5.3). These results are much weaker when the analysis is done using probit, the only case where there is a substantive difference between probit and OLS regression..

The equations for job satisfaction (Table 5.4) explain very little variance. Only one coefficient out of 25 in Table 20 is significant, a rate below chance.

Employment outcomes for women. As with men, there are no significant relationships between participation in government employment and training programs and subsequent earnings or hourly rate of pay (Tables 5.5 and 5.6). The tendency for subsidized employment to lead to further subsidized employment is smaller than was observed for men, and is not significant with previous weeks worked controlled (Table 5.7) As with the men, the probit results show little or no effect. Job counseling tends to be associated with being in a subsidized job in 1982, at least for youth who received such services within the previous two years.

As with men, the models are not very useful in explaining job satisfaction, although 1980 program services do seem related to job satisfaction (Table 5.8). Women who received basic education are more

Table 5.1 Regression of Earnings on Program Services for Men[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	1138.40 (1.17)	526.44 (0.71)	-60.79 (-0.06)	383.18 (0.61)	-277.99 (-0.33)
Subsidized Employment	-537.96 (-0.76)	214.13 (0.36)	-499.96 (-0.60)	271.82 (0.52)	-1005.40 (-1.34)
Basic Education	927.18 (0.91)	693.71 (0.93)	383.55 (0.36)	854.62 (1.30)	225.36 (0.26)
Job Counseling	144.48 (0.18)	-420.44 (-0.64)	-226.07 (-0.24)	-420.81 (-0.73)	-761.23 (-0.94)
Other Services	-552.87 (-0.64)	-82.94 (-0.12)	188.20 (0.17)	-663.64 (-1.05)	326.04 (0.36)
N	1255	1651	994	1640	1039
Adj. R^2	0.15	0.18	0.19	0.20	0.16
F	8.78	13.56	8.61	16.70	7.63

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.2 Regression of Hourly Rate Pay 1982 on Program Services for Men[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	25.93 (0.59)	-43.37 (-1.06)	-45.98 (-0.90)	9.17 (0.28)	5.10 (0.11)
Subsidized Employment	0.17 (0.01)	11.28 (0.31)	-15.46 (-0.36)	-49.58 (-1.78)	-63.62 (-1.57)
Basic Education	77.75 (1.67)	77.78 (1.94)	66.30 (1.29)	-16.22 (-0.47)	-31.72 (-0.68)
Job Counseling	-50.05 (-1.31)	-40.70 (-1.12)	-26.07 (-0.56)	-0.79 (-0.03)	21.09 (0.47)
Other Services	-26.62 (-0.64)	10.32 (0.24)	27.57 (0.51)	13.19 (0.40)	25.56 (0.51)
N	970	1019	745	1169	767
Adj. R^2	0.10	0.13	0.10	0.12	0.07
F	4.78	6.32	3.88	6.65	3.07

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year and who were employed on interview date, 1982.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.3 Regression of Subsidized Employment (1982) on Program Services for Men[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	0.020	0.023	0.034	0.031	0.109
	(0.59)	(0.55)	(0.80)	(0.85)	**(2.92)
Subsidized Employment	0.045	0.104	0.045	0.262	0.242
	(1.69)	**(3.03)	(1.25)	**(8.44)	**(7.16)
Basic Education	-0.019	-0.024	-0.038	0.051	0.012
	(-0.55)	(-0.58)	(-0.88)	(1.33)	(0.31)
Job Counseling	0.024	0.049	0.065	0.015	-0.053
	(0.82)	(1.35)	(1.70)	(0.44)	(-1.44)
Other Services	-0.026	-0.086	-0.026	-0.125	-0.097
	(-0.82)	*(-2.14)	(-0.58)	**(-3.38)	*(-2.32)
N	1011	1242	787	1240	821
Adj. R^2	0.03	0.07	0.04	0.13	0.15
F	2.14	4.13	2.14	8.25	5.67

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.4 Regression of Job Satisfaction on Program Services for Men[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	0.271 *(2.02)	-0.036 (-0.26)	0.036 (0.22)	0.017 (0.14)	0.075 (0.50)
Subsidized Employment	-0.079 (-0.74)	-0.134 (-1.07)	-0.123 (-0.89)	-0.121 (-1.17)	-0.220 (-1.64)
Basic Education	-0.199 (-1.40)	-0.188 (-1.37)	-0.282 (-1.73)	0.224 (1.77)	0.259 (1.67)
Job Counseling	0.013 (0.12)	0.193 (1.58)	0.269 (1.87)	-0.098 (-0.88)	-0.074 (-0.52)
Other Services	0.056 (0.45)	-0.006 (-0.04)	-0.073 (-0.44)	0.111 (0.92)	0.177 (1.10)
N	1105	1185	872	1358	905
Adj. R^2	0.01	0.02	0.01	0.02	0.02
F	1.54	1.64	1.37	1.94	1.77

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year and who were employed on interview date, 1982.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.5 Regression of Earnings on Program Services for Women[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	153.45	482.89	673.55	804.34	1122.80
	(0.26)	(1.01)	(1.19)	(1.64)	(1.75)
Subsidized Employment	-700.18	553.24	-287.46	243.36	113.33
	(-1.37)	(1.30)	(-0.54)	(0.58)	(0.21)
Basic Education	203.20	-155.39	-27.03	-776.26	-1072.20
	(0.31)	(-0.31)	(-0.05)	(-1.60	(-1.77)
Job Counseling	193.21	-371.04	-873.10	-507.75	-647.45
	(0.35)	(-0.87)	(-1.68)	(-1.15)	(-1.12)
Other Services	-256.28	-603.59	189.75	139.77	221.46
	(-0.41)	(-1.17)	(0.29)	(0.28)	(0.34)
N	1579	1905	1303	1910	1384
Adj. R^2	0.22	0.17	0.23	0.19	0.20
F	16.43	14.79	14.32	17.97	12.23

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.6 Regression of Hourly Rate Pay 1982 on Program Services for Women[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	-2.17 (-0.05)	6.46 (0.15)	15.70 (0.30)	15.40 (0.40)	57.09 (1.37)
Subsidized Employment	-49.33 (-1.49)	-12.34 (-0.32)	-7.04 (-0.15)	-26.46 (-0.78)	-5.63 (-0.16)
Basic Education	43.33 (1.02)	3.36 (0.08)	1.88 (0.04)	-3.86 (-0.10)	-20.69 (-0.52)
Job Counseling	20.06 (0.54)	-22.90 (-0.60)	-35.06 (-0.79)	-19.75 (-0.56)	-11.75 (-0.32)
Other Services	-24.18 (-0.60)	-12.45 (-0.26)	-12.63 (-0.22)	2.50 (0.06)	-23.66 (-0.53)
N	1048	1015	822	1133	845
Adj. R^2	0.12	0.10	0.08	0.08	0.08
F	5.84	4.85	3.41	4.37	3.40

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year and who were employed on interview date, 1982.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.7 Regression of Subsidized Employment (1982) on Program Services for Women[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	0.063 (1.93)	0.070 1.62)	0.002 (0.04)	-0.052 (-1.27)	-0.077 (-1.91)
Subsidized Employment	0.029 (1.05)	0.100 **(2.80)	0.051 (1.48)	0.113 **(3.25)	0.009 (0.28)
Basic Education	0.031 (0.87)	-0.011 (-0.25)	-0.037 (-1.02)	0.039 (0.96)	0.042 (1.09)
Job Counseling	-0.019 (-0.62)	0.102 **(2.75)	0.105 **(3.07)	0.054 (1.48)	0.086 *(2.47)
Other Services	-0.029 (-0.87)	-0.144 **(-3.18)	-0.071 (-1.65)	0.016 (0.36)	0.045 (1.06)
N	1081	1187	856	1181	880
Adj. R^2	0.04	0.09	0.03	0.12	0.06
F	2.62	4.83	1.96	6.96	2.73

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.8 Regression of Job Satisfaction on Program Services for Women[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	-0.032 (-0.23)	0.265 (1.84)	0.266 (1.65)	-0.003 (-0.02)	0.048 (0.29)
Subsidized Employment	0.053 (0.47)	0.139 (1.06)	0.143 (0.99)	0.101 (0.84)	0.136 (0.97)
Basic Education	-0.050 (-0.33)	0.051 (0.36)	0.022 (0.15)	0.219 (1.56)	0.321 *(2.01)
Job Counseling	-0.178 (-1.38)	-0.163 (-1.27)	-0.235 (-1.67)	0.033 (0.26)	0.023 (0.16)
Other Services	0.014 (0.10)	-0.193 (-1.18)	-0.080 (-0.44)	-0.334 *(-2.22)	-0.379 *(-2.13)
N	1095	1079	870	1207	898
Adj. R^2	0.02	0.01	-0.00	0.02	0.02
F	1.96	1.37	0.86	1.71	1.74

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year and who were employed on interview date, 1982..

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

satisfied with their jobs, while women receiving support services are less satisfied. The effect of basic education could mean that some women receiving this service attained credentials needed for better (if not higher paying) jobs.

Educational outcomes for men. Table 5.9 shows that there is little relationship between services and subsequent school enrollment. In 1980, there is a significant negative association between being in skill training and being enrolled, but this difference became negligible when previous work history and education are taken into account.

While youth in government employment programs do not seem more likely to be in school in 1981, Table 5.10 shows that youth who report basic education are significantly more likely than their counterparts to have received a high school diploma or GED by the 1982 interview date. Apparently, at least some participants find the programs a successful route to this basic educational credential. Subsidized employment in 1978 is also associated with having a high school certificate in 1981, perhaps due to the role of subsidized employment in initiating youth into the employment and training system.

Educational outcomes for women. Program services in 1980 have a systematic association with school enrollment in 1982 Table 5.11). Receiving basic education from a government employment and training program in 1980 is positively associated with subsequent school enrollment. On the other hand, the coefficient for receiving classroom training for specific job skills is negative. Similarly, women receiving basic education in 1980 are more likely than other women to have received a high school diploma or GED by 1982 (Table 5.12).

Welfare outcomes for men. The models do not explain welfare receipt by men particularly well, and there are few significant coefficients for program

Table 5.9 Regression of Enrollment Status (1982) on Program Services for Men[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	-0.019	0.013	-0.013	-0.112	-0.016
	(-0.32)	(0.22)	(-0.19)	(-1.99)	(-0.26)
Subsidized Employment	0.009	0.072	0.045	0.076	0.056
	(0.23)	(1.45)	(0.81)	(1.62)	(0.10)
Basic Education	-0.047	-0.035	-0.109	-0.053	-0.018
	(-0.75)	(-0.55)	(-1.49)	(-0.90)	(-0.28)
Job Counseling	0.026	0.116	0.014	0.001	-0.065
	(0.53)	*(2.14)	(0.22)	(0.03)	(-1.10)
Other Services	0.015	-0.191	-0.034	-0.067	-0.056
	(0.28)	**(-3.25)	(-0.48)	(-1.20)	(-0.83)
N	1237	1649	986	1631	1037
Adj. R^2	0.12	0.26	0.15	0.25	0.17
F	6.73	20.57	6.75	21.72	7.92

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.10 Regression of Diploma 1982 on Program Services for Men[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	-0.008 (-0.15)	0.007 (0.13)	-0.035 (-0.50)	0.096 *(2.01)	-0.027 (-0.46)
Subsidized Employment	0.099 *(2.32)	0.090 (1.77)	0.058 (1.04)	-0.045 (-1.12)	-0.020 (-0.38)
Basic Education	0.051 (0.84)	0.150 *(2.52)	0.146 *(2.01)	0.070 (1.41)	0.150 *(2.47)
Job Counseling	-0.006 (-0.13)	-0.073 (-1.39)	-0.164 **(-2.62)	-0.012 (-0.28)	-0.050 (-0.89)
Other Services	-0.103 *(-1.99)	-0.081 (-1.35)	0.017 (0.24)	0.000 (0.01)	0.005 (0.08)
N	1238	1364	987	1634	1039
Adj. R^2	0.49	0.46	0.46	0.54	0.52
F	42.27	40.98	29.50	67.29	38.00

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year and who were employed on interview date, 1982.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.11 Regression of Enrollment Status (1982) on Program Services for Women[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	-0.003 (-0.06)	0.002 (0.05)	0.014 (0.25)	-0.032 (-0.57)	-0.129 *(-2.18)
Subsidized Employment	-0.026 (-0.62)	0.032 (0.66)	-0.016 (-0.30)	0.083 (1.74)	0.040 (0.81)
Basic Education	-0.007 (-0.14)	0.018 (0.31)	-0.022 (-0.39)	0.044 (0.78)	0.122 *(2.15)
Job Counseling	-0.051 (-1.13)	-0.008 (-0.17)	-0.008 (-0.15)	-0.080 (-1.62)	0.008 (0.16)
Other Services	0.051 (1.02)	-0.050 (-0.87)	0.071 (1.12)	0.038 (0.66)	0.014 (0.23)
N	1557	1889	1289	1888	1367
Adj. R^2	0.14	0.24	0.17	0.24	0.18
F	9.80	21.71	9.99	24.39	11.11

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.12 Regression of Diploma 1982 on Program Services for Women[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	-0.026	0.083	0.094	0.027	-0.045
	(-0.61)	(1.84)	(1.86)	(0.59)	(-0.88)
Subsidized Employment	0.027	0.032	0.107	0.066	0.011
	(0.73)	(0.75)	*(2.27)	(1.66)	(0.26)
Basic Education	-0.066	0.031	0.060	0.185	0.120
	(-1.41)	(0.66)	(1.19)	*(4.02)	*(2.43)
Job Counseling	0.033	-0.050	-0.095	-0.036	-0.055
	(0.81)	(-1.19)	*(-2.04)	(-0.88)	(-1.20)
Other Services	0.036	0.025	-0.011	0.020	0.107
	(0.82)	(0.47)	(-0.19)	(0.42)	*(2.06)
N	1557	1599	1289	1889	1368
Adj. R^2	0.54	0.54	0.53	0.60	0.61
F	64.00	64.64	48.77	99.33	71.37

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year and who were employed on interview date, 1982.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

services (Tables 5.13 and 5.14). Basic education is negatively related to being on welfare and to the amount of welfare received, but the relationship is only significant for being on welfare among those receiving basic education in 1978. Job counseling and classroom training for specific occupational skills, on the other hand, tend to be positively associated with welfare, but few coefficients meet the standard criteria for significance.

Welfare outcomes for women. Job counseling in 1979 seems to be positively related both to being on welfare and to the amount of welfare received (Tables 5.15 and 5.16). Also women who were in subsidized employment in 1980 tended to receive more welfare money than did other women. The relationship with subsidized employment, however, reverses to the point that subsidized employment in 1978 is significantly related to lower welfare amounts in 1981.

II. SUMMARY AND CONCLUSIONS

In order to condense the results of the preceding mass of data, Table 5.17 lists for each outcome measure the years in which each service had a significant effect. It is clear that the programs had little effect on subsequent employment, either in terms of pay or of job satisfaction. There may be some slight tendency for youth to continue getting subsidized jobs from year to year, but this is not a very robust finding.

Similarly, programs did not seem to reduce the likelihood that a participant would be on welfare in 1981. The amount of welfare received may actually have been increased for some participants. For women, being in subsidized employment in 1980 and receiving job counseling in 1979 were both related to receiving higher amounts of welfare in 1981. It is possible that through coordination of the CETA and welfare service agencies some participants were made more aware of the range of support available and thus were able to increase their level of welfare support.

Table 5.13 Regression of Receiving Welfare on Program Services for Men[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	0.038 (1.00)	0.065 (1.71)	0.031 (0.65)	-0.034 (0.87)	0.067 (1.44)
Subsidized Employment	-0.029 (-1.00)	-0.053 (-1.61)	-0.061 (-1.63)	0.003 (0.09)	-0.017 (-0.41)
Basic Education	-0.082 *(-1.99)	-0.008 (-0.20)	0.013 (0.27)	-0.046 (-1.15)	-0.045) (-0.94)
Job Counseling	0.109 **(3.40)	0.013 (0.39)	0.021 (0.50)	-0.027 (-0.78)	-0.023 (-0.52)
Other Services	0.007 (0.20)	0.041 (1.03)	0.043 (0.93)	0.047 (1.23)	0.074 (1.50)
N	1244	1372	991	1636	1040
Adj. R^2	0.11	0.08	0.09	0.06	0.07
F	6.14	5.08	4.24	4.77	3.73

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year and who were employed on interview date, 1982.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.14 Regression of Welfare Amount on Program Services for Men[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	98.67 (1.71)	149.94 **(2.67)	149.13 *(1.97)	87.14 (1.66)	117.85 (1.64)
Subsidized Employment	-8.91 (-0.21)	-31.27 (-0.64)	-28.50 (-0.48)	-26.07 (-0.60)	-27.45 (-0.43)
Basic Education	-52.41 (-0.85)	-32.96 (-0.58)	-81.98 (-1.05)	-54.55 (-1.00)	-77.94 (-1.06)
Job Counseling	46.87 (0.97)	22.18 (0.44)	36.42 (0.54)	-10.50 (-0.22)	-47.71 (-0.70)
Other Services	-18.15 (-0.35)	-0.06 (-0.00)	-0.12 (-0.00)	25.44 (0.50)	76.59 (1.00)
N	1241	1367	988	1631	1036
Adj. R^2	0.04	0.07	0.07	0.07	0.08
F	2.96	4.57	3.61	5.34	3.95

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year and who were employed on interview date, 1982.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.15 Regression of Receiving Welfare on Program Services for Women[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	-0.005 (-0.11)	-0.043 (-0.90)	-0.081 (-1.50)	-0.005 (-0.10)	-0.062 (-1.03)
Subsidized Employment	0.021 (0.51)	-0.065 (-1.44)	-0.051 (-1.01)	0.009 (0.19)	0.021 (0.42)
Basic Education	0.013 (0.25)	-0.025 (-0.52)	0.004 (0.08)	-0.028 (-0.55)	0.028 (0.49)
Job Counseling	0.023 (0.53)	0.081 (1.84)	0.125 *(2.52)	-0.022 (-0.46)	0.009 (0.17)
Other Services	0.000 (-0.01)	0.026 (0.48)	-0.026 (-0.43)	0.036 (0.67)	0.035 (0.58)
N	1570	1613	1301	1901	1377
Adj. R^2	0.37	0.36	0.37	0.33	0.39
F	33.13	32.02	26.81	33.77	30.16

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year and who were employed on interview date, 1982.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

Table 5.16 Regression of Welfare Amount on Program Services for Women[a]

	Participation Year				
	1978	1979		1980	
		A	B[b]	A	B[b]
Skill Training	359.41	314.99	393.55	-232.32	-221.19
	(0.86)	(0.72)	(0.72)	(-0.52)	(-0.36)
Subsidized Employment	-872.61	-388.70	-297.04	832.99	1237.40
	*(-2.42)	(-0.92)	(-0.58)	*(2.17)	*(2.38)
Basic Education	601.17	389.56	499.40	-331.82	-358.36
	(1.32)	(0.86)	(0.92)	(-0.75)	(-0.61)
Job Counseling	276.64	841.16	1134.40	111.20	-10.09
	(0.71)	*(2.08)	*(2.29)	(0.28)	(-0.02)
Other Services	406.80	-528.20	-863.98	-508.51	-592.25
	(0.94)	(-1.04)	(-1.39)	(-1.10)	(-0.94)
N	1569	1609	1298	1897	1373
Adj. R^2	0.11	0.11	0.11	0.12	0.12
F	8.00	8.12	6.53	10.15	7.25

UNIVERSE: Civilians in 1979 with family incomes at or below the lower living standard for the participation year and who were employed on interview date, 1982.

[a] t-values in parentheses.

[b] Model A does not include lagged education and employment measures, which are present in Model B.

* Significant at the .05 level, using a two-tailed test.
** Significant at the .01 level, using a two-tailed test.

In terms of educational attainment, educational services appear to provide a means of reaching at least a high school level, although there is no effect on whether the youths are currently in school. Note that level of educational attainment is a direct, irrevocable consequence of enrollment in classroom educational programs. It appears that CETA can help to provide this entry-level educational certification to youth who might otherwise not have done so.

It is interesting to look at the results another way, focussing on which outcomes are affected by type of service rather than which types of service affect each outcomes--i.e, to look down the columns of table 5.17 rather than looking across the rows. One striking effect is the lack of consistency. In no case does a relationship between outcome and service reach significance for all three program years. Too, there is no consistency in effects by outcome domain--employment, education, or welfare. To some extent, this is to be expected, since the outcomes are not neatly linked themselves. One major reason for leaving school is completion of a degree, so that participants who who have attained a GED or who have remained in high school as a result of the program may be less likely than their non-participant counterparts to continue their education. Similarly, subsidized employment positions are limited as to their allowable wage levels, so that continuing in subsidized work might itself reduce post-program wages.

Given these considerations, a few patterns are suggestive. Subsidized employment may to some extent serve to help youth obtain a high school degree, at least for 1978 males and 1979 females. Basic education is linked with job satisfaction for young women and with not being on welfare for men who participated in 1978. At least for the women, the services reported as job counseling seem to be related to remaining in subsidized employment and in the

Table 5.17 Summary of Significant Relationships between Program Services and Outcomes

Outcome Measure	Service[a] Skill Training	Subsidized Employment	Basic Education	Job Counseling	Other
Results for Women					
Earnings					
Hourly pay					
Subsidized employment	78 80B(-)	79A 80A		79A 79B 80B	79A(-) 79B(-)
Job Satisfaction			80B		80A(-) 80B(-)
Enrollment status	80B(-)		80B		
Diploma		79B	80A 80B	79B(-)	80B
Receiving welfare				79B	
Amount of welfare		78(-) 80A 80B		79A 79B	
Results for Men					
Earnings					
Hourly pay				79A	
Subsidized employment	80B	79A 80A 80B			79A(-) 80A(-) 80B(-)
Job satisfaction	78				
Enrollment status				79A	79A(-)
Diploma	80A	78	79A	79B(-) 79B 80B	78(-)

Table 5.17 (Cont.)

Welfare receipt				78(-)	78
Welfare amount	79A 79B				

[a] Table entries indicate the year and model in which the relationship between the program service and the outcome measure reached at least the .05 level of significance. Negative relationships are indicated by '(-).'

welfare system. For both men and women, job counseling is negatively related to getting a high school or GED diploma.

As might be expected, programs reported for the 1980 calendar year appear more likely than programs reported in earlier years to have a substantial (or at least statistically significant) relationship to 1981 outcomes. Results for longer time periods should be more affected than results for shorter periods by the diversity of events which affect individuals, making the effects of training harder to identify reliably over time. It is also possible that the 1980 programs benefited from experiences gleaned from earlier years. Further analysis controlling on the length of time between the service and the follow-up would help to separate the two effects.

What can be concluded about the effectiveness of government training programs? There are no large effects, perhaps due to the variability of program quality inherent in a decentralized system. While effects on employment are very few, through the basic education services, more participants receive high school diplomas or their equivalent than do comparable youth among the non-participants. This education may provide long term benefits in the labor market.

It is rather disturbing that job counseling should have some apparently negative effects. It could be argued that youth who receive job counseling have more "hard core" problems with employment than other youth, but many factors supposedly measuring such problems are included in the regression models. While selection effects cannot be ruled out, it may also be the case that difficult youth are counseled into remaining in the welfare and subsidized employment programs rather than into achieving economic independence.

Several caveats are in order. First, no attempt has been made to control for the selection of individuals into programs. Those in government training programs may not be representative of the average eligible. Second, by looking at detailed program types, sample sizes may not be sufficiently large to ascertain statistically significant results. Also, no attempt has been made to estimate the effect of being in a government program per se. Third, no analysis has been attempted to see whether programs induce a smoother transition to work in terms of subsequent employment and unemployment experiences.

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CHAPTER 6

THE HIGH SCHOOL DROPOUT IN AN OVEREDUCATED SOCIETY

by

William R. Morgan

I. INTRODUCTION

Over the past fifty years there has been a dramatic historical rise in high school completion by the American public. Since 1940 the proportion of young adults 25-29 who are high school graduates has more than doubled, from 37.8 percent to 85.8 percent in 1980 (National Center for Education Statistics, 1982: 16). Coincident with this increased completion rate has been a substantial reduction in the gap between whites and minorities. Young adult blacks and Hispanics still are 10.1 percentage points behind whites in their high school completion rate (77.1 percent in 1980 compared with 87.2 percent for whites). In 1940, however, they were 29.1 points behind (12.1 percent compared to 41.2 percent).

From a more institutional perspective, these increases in high school graduation reflect a major transformation of American secondary education. Before World War II the comprehensive American high school was geared mainly toward preparing the terminal graduate for useful employment and citizenship. College preparatory instruction was provided only for an elite minority, and the decisios to attend college was still exceptional for most youth. Thus, what was an established mass terminal education program in 1940 has steadily moved towards a mass college preparatory program (Trow, 1961). High school graduation increasingly has value primarily in relation to college entrance, decreasingly as a qualification for employment in a permanent career position.

This shifting curriculum emphasis in secondary education may have been more in response to rising parental ambition than to changing demands from the labor market. Analysts have suggested three ways the American workforce in fact is now overeducated. From a labor market standpoint, the increased supply of college graduates has reduced their competitive advantage in starting salaries (Freeman, 1976), lowering the personal investment value of a college education. From a skills qualification standpoint, Rumberger (1980: 78) estimated that 40 percent of all college-educated workers are overqualified for the jobs they hold. Finally, from a psychological standpoint many well-educated workers have unfulfilled job expectations resulting in increased job dissatisfaction in the workforce (Sheppard and Herrick, 1972; Kalleberg and Sorenson, 1973).

Weighing heavily against these costs of educational expansion are the equity gains of the disadvantaged. Much of the overall increase in educational attainment can be attributed to the minorities and youth from relatively low socioeconomic origins. The percentage of young adult minorities with four years of college has jumped from a negligible 1.6 percent in 1940 to 14.6 percent in 1980, compared with an increase from 6.4 percent to 23.9 percent for whites. Institutionally these gains coincide with the shift from a racially segregated to an increasingly integrated educational system. Any policy interventions designed to reduce or ameliorate the problems of overeducation could be detrimental to these gains. Substantial evidence suggests that the improved educational attainment of minorities has reduced racial inequities in the occupational attainments of young workers, although researchers disagree in interpreting the size of the effect (e.g. Featherman and Hauser, 1976; Smith and Welch, 1977; Darity and Myers, 1980). Unfortunately employment conditions for the substantial numbers of minority and disadvantaged youth who still have not participated in this educational advance are now even worse than before (Ellwood and Wise, 1983). How to draw these remaining youth into the educational mainstream is the central policy issue of this report.

Accordingly, this report focuses on the circumstances and early labor market experiences of America's high school dropouts. Four sections of findings are presented. The first section documents the changes over the first four years of the survey in the educational attainments of the youth cohort, considering in aggregate all 33.5 million noninstitutionalized civilian and military youth who were aged 14-21 on January 1, 1979. Possible age and temporal variation in dropout propensity is examined using a transition probability model of educational progression. The model is then expressed in terms of variation in age-specific dropout prevalence, and three types of dropouts are distinguished according to their age and permanence. The second section disaggregates these age-specific dropout rates in order to examine sex, ethnic, and regional variations. A third section reports the expressed reasons for leaving school by all ever-dropped out youth, by sex. Dropout youth are then compared with other youth on socioeconomic background characteristics, education and training experiences, labor market experience, and current household and labor market activity.

The fourth section assesses the impact of dropping out on the early labor market experiences of these youth. The early labor market value of high school completion is examined separately for males and females, and for whites, blacks, and Hispanics, considering separately its human capital and certification components. Returns to schooling are assessed for annual earnings, employment duration, job status, and wage rates. Possible differential returns from different types of high school completion, ranging from regular diploma to GED certification, and from age-normal to age-delayed graduation dates, are examined in a concluding section on policy options for high school dropouts.

II. THE PREVALENCE AND PERMANENCE OF DROPOUT YOUTH

Table 6.1 categorizes the youth cohort into a four-fold educational status division of current high school enrollees and three levels of high school leavers- 1) dropouts--all nonenrolled youth without a diploma or GED; 2) terminal graduates--all youth with a diploma or GED who have not attended college; and 3) graduates with college--all youth with a diploma or GED who have attended some college. As the cohort has matured over the first four survey years from the initial 1979 age span of 14-21 to the 1982 span of 17-24, the proportion of high school enrollees has dropped steadily from approximately half the cohort (16.2 million) to a little over one-eighth (4.4 million youth). Most of the remaining high school students were seniors in 1982.

While Table 6.1 provides a useful summary of the educational progression of the total cohort, it is relatively useless for charting possible age or temporal variation in dropout propensity. The steady increase of youth in the dropout category from 10.9 in 1979 to 14.2 in 1982 reflects the normal age-correlated increase in all leavers, including both graduates and dropouts.

One simple method of computing an aggregate dropout tendency for this youth cohort is to compute for each year the number of dropouts as a proportion of all high school leavers (Table 6.2). Still, however, the steady annual reduction in the proportion of dropouts from 21.1 percent in 1979 to 16.4 in 1982 is not indicative of any temporal decline in overall dropping out tendencies. A clue as to the underlying explanation is the similar annual decrease in proportion of terminal graduates. Being a dropout or terminal graduate is not necessarily a permanent condition. A certain number of dropouts reenroll and get a diploma, while others become graduates by virtue of passing a GED examination. Of the 25.5 million youth who had graduated by

Table 6.1 Educational Attainment Distribution of All Non-Institutionalized Civilian and Military Youth 14-21 in 1979, for Each Year from 1979 to 1982

Survey Year (Cohort Age)[a]	High School Enrollee	Current Educational Status High School Dropout	Terminal Graduate	Graduate with Coll.	Total (N)[b]
1979 (14-21)	48.4% (16,220)	10.9% (3,650)	18.3% (6,150)	22.4% (7,510)	100.0% (33,530)
1980 (15-22)	36.8 (12,320)	12.1 (4,070)	21.5 (7,220)	29.6 (9,920)	100.0 (33,530)
1981 (16-23)	24.0 (8,030)	13.7 (4,590)	24.2 (8,110)	38.2 (12,800)	100.0 (33,530)
1982 (17-24)	13.2 (4,430)	14.2 (4,770)	27.1 (9,090)	45.5 (15,240)	100.0 (33,530)

[a] Age on January 1 of survey year.

[b] Ns are reported in thousands.

Table 6.2 Proportion of High School Leavers Who Are Dropouts, Terminal Graduates, or College Attenders, from 1979 to 1982.

Survey Year	Dropouts	Terminal Graduates	College Attenders	All Leavers Total	 N(Thous.'s)
1979	21.1%	35.5%	43.4%	100.0%	17,310
1980	19.2	34.0	46.8	100.0	21,210
1981	18.0	31.8	50.2	100.0	25,500
1982	16.4	31.2	52.4	100.0	29,100

1982, 6.3 percent (1.5 million) held a GED rather than a diploma. Some of these former dropouts will remain terminal graduates, while others go on to attend college. Thus the declining dropout proportion shown in Table 6.2 primarily reflects the cumulative increase over time in number of exits from the dropout status category; conversely, the relatively high proportion of dropouts relative to all leavers in the early years of the survey occurs because most of these eventual returning dropouts had not yet returned. It may be they first wanted to test the labor market, and as we shall see later, such a test was likely to encourage further educational certification.[1]

A still better method of assessing aggregate dropout prevalence is to compute transition probabilities. An annual transition probability is the likelihood that youth in a given educational status one year will remain or move to another status the next. Computationally they are simply the proportion of all youth in a given status category one year who are in one of the four possible statuses the next year. Table 6.3 presents a full set of these values for the first four years of the survey, including the three annual transitions and the three-year transition from 1979 to 1982.

The first row of values simply demonstrates the overall declining reenrollment probability as the distribution of normal age-grade level matched youth moves from the full set of high school grades 9-12 in 1979 to grade 12 in 1982. Thus high school youth enrolled in 1979 had about a three in four (.75) chance of being enrolled in 1980; 1980 enrollees a two in three (.65)

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[1] Another explanation for this decline would apply if it were the case that the initial 1979 sample contained a disproportionately high number of dropouts, even after application of the sample weights. The gradual decline would then also partly reflect, at least in part, the statistical tendency of a regression toward the mean, or true dropout rate. Negative evidence for this possibility is the fact that the older half of the cohort does not differ from the younger half on key background characteristics, and the ability of the transition probability model presented next to account for this variation.

Table 6.3 Educational Status Transition Probabilities, from 1979 to 1982, for the Youth Cohort

Origin to Destination Status	Origin/Destination 79/80	80/81	Transition Years 81/82	79/82
Enrolled to				
E	.746	.647	.545	.269
D	.052	.066	.064	.108
G	.102	.125	.185	.258
C	.100	.162	.207	.365
Dropped Out to				
E	.022	.029	.022	.018
D	.898	.907	.915	.813
G	.010	.009	.010	.019
C	.069	.055	.054	.149
Terminal Grad. to				
G	.914	.931	.943	.787
C	.085	.069	.056	.213

N=33,530,000

Legend: E = high school enrollee; D = high school dropout; G = terminal high school graduate; C = high school graduate with college.

chance in 1981; and those remaining 1981 enrollees a little over one in two (.54) chance. The odds of becoming a graduate in the next year (rows three and four) increase from one in five (.20) for all 1979 enrollees to two in 5 (.39) for 1981 enrollees. These reenrollment and graduation rates demonstrate more precisely the influence of cohort aging and grade advancement, and thus provide a useful baseline for assessing the other transition rates.

The dropout probabilities are relatively constant across the three annual transitions. The probability of an enrollee becoming a dropout in the next year is a little over three in fifty (.06) each year; the probability of a dropout reenrolling the next year is only a little over one in fifty (.02), and of graduating (rows three and four) three in fifty (.06). The 79-82 three year transition rate gives a composite picture of the net impact of competing tendencies. The odds were a little better than four in five (.81) that one of the 3.6 million dropouts in 1979 would still be a dropout by 1982. The odds were about one in ten (.11) that one of the 16.2 million high school enrollees in 1979 would be a dropout by 1982.

After noting this relative permanence of dropouts, however, it is also important to realize that their .20 individual propensity to proceed to further education in fact generates approximately ten percent of the college-attending population.[2] The decision to forego the immediate path to college, assuming it was made more often of necessity than choice, thus makes the condition of high school dropout only a temporary, provisional educational stage for many youth. Such decisions are no doubt facilitated by the structure of contemporary American higher education, with its broad range of entrance requirements and institutional forms and quality. Of the 12.1 percent of 1979 dropouts who achieved a GED by 1982, over 90 percent reported they had attended some college, and for most it was a two-year college. Anecdotal evidence further suggests many of these youth continue a course of higher study at the same institution that prepared them for the GED exam. On the more negative side, failure in the youth labor market is also a key factor in moving dropout youth back to school. An important belief in our society has been that however "dead-end" one's job prospects may be, one's opportunity for further education need not be similar. As long as the investment costs in a tight education market continue to be lower than the investment returns in a loose labor market, the proportion of dropout youth should continue to diminish. Examination of the negative labor market experiences of dropout youth will lend further support to this assertion.

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[2] The net increase from 1979 to 1980 in college attenders was 2.4 million. Only two-thirds (1.6 million) came directly from high school, the remainder being delayed entrants--520,000 youth who the previous year were graduates but not enrolled in school, and 250,000 youth who in the previous year were dropouts. In order to check the possibility that some of this college attendance might be due to respondent misreports, in that they could have considered their GED studies away from high school as equivalent to college, date of GED receipt was compared with reported date of college entrance. Although there was substantial missing data on one or both of these two items, the existing data showed that eight of every nine GED holders who attended college entered after they had received their GED.

Barring problems of sampling error, an even more precise assessment of dropout probability is to examine transition rates each year within school grade levels, as presented in Table 6.4. Two tendencies are apparent. First, youth in grades 9 and 12 are less likely to drop out than those in 10 and 11. Second, youth one or more years behind their normal age-grade are the most likely to drop out. Readers should thus keep in mind the aggregate probabilities reported in Table 6.3 are in fact only averages across these grade levels. For example, the 1981-82 enrollee-to-dropout probability of .064 averages the reduced probability of dropping out for the twelfth graders and the higher rates for the other remaining enrolled youth who are behind their normal grade level.

Table 6.4 Probability of High School Enrollee Becoming a Dropout in Next Year, by Current Grade Level, for All High School Enrollees in 1979, 1980, and 1981

Current Grade Level	Enrollment Year 1979	1980	1981
8	.064	.192	.330
9	.040	.104	.300
10	.066	.067	.103
11	.067	.077	.067
12	.031	.037	.037
Total	.052	.066	.064
N (thousands)	16,220	12,320	8,030

In summary, these transition rates suggest the final proportion of dropouts in the cohort should be no higher than the total 14 percent figure reported in 1982 (Table 6.1). The flow of new dropouts has diminished with cohort aging, while the flow of exiting dropouts has increased. Application of the 1981-82 enrollee-to-dropout transition probability to the relatively small 1982 pool of enrollees (.064 x 4.4 million) and the offsetting dropout-to-graduate probability to the large 1982 pool of dropouts (.06 x 4.8 million) produces an estimated net 30,000 decrease in the total population of dropouts for 1983.

Figure 6.1, a graph of the age-specific dropout prevalence in the cohort as a whole, provides a snap-shot summary of this transition probability analysis. The curve shows over the four years of the survey the proportion of youth in each age category who are dropouts.[3] A relatively constant rate of growth in dropout prevalence occurs during the normal high school ages of 15-18, peaking at age 19, and steadily diminshing and levelling off thereafter.

This curvilinear relationship of age to dropout prevalence is not, as already argued, an age-related change in individual propensity to drop out. It is rather the different mix of inflows to and outflows from the pool of dropouts at each age level. Dropout prevalence in the cohort does not increase after age 19 primarily because the pool of enrollees from which new dropouts flow dries up. Few youth are still enrolled by age 19. The reason dropout prevalence begins to decline after this age point is that youth in most states become eligible for the first time then to take the GED examina-

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[3] Such age-specific averaging across survey years presumes the absence of any period effects, and can be checked by averaging within years. Accordingly, an average dropout rate for each survey year was computed by averaging the 17-22 age-specific dropout rates in each year. Variation of no more than one-half percent was well within the limits of sampling error and failed to show any period tendencies across the four-year time interval. From 1979 to 1982 these dropout rates were 14.5, 14.3, 14.7 and 14.8, respectively.

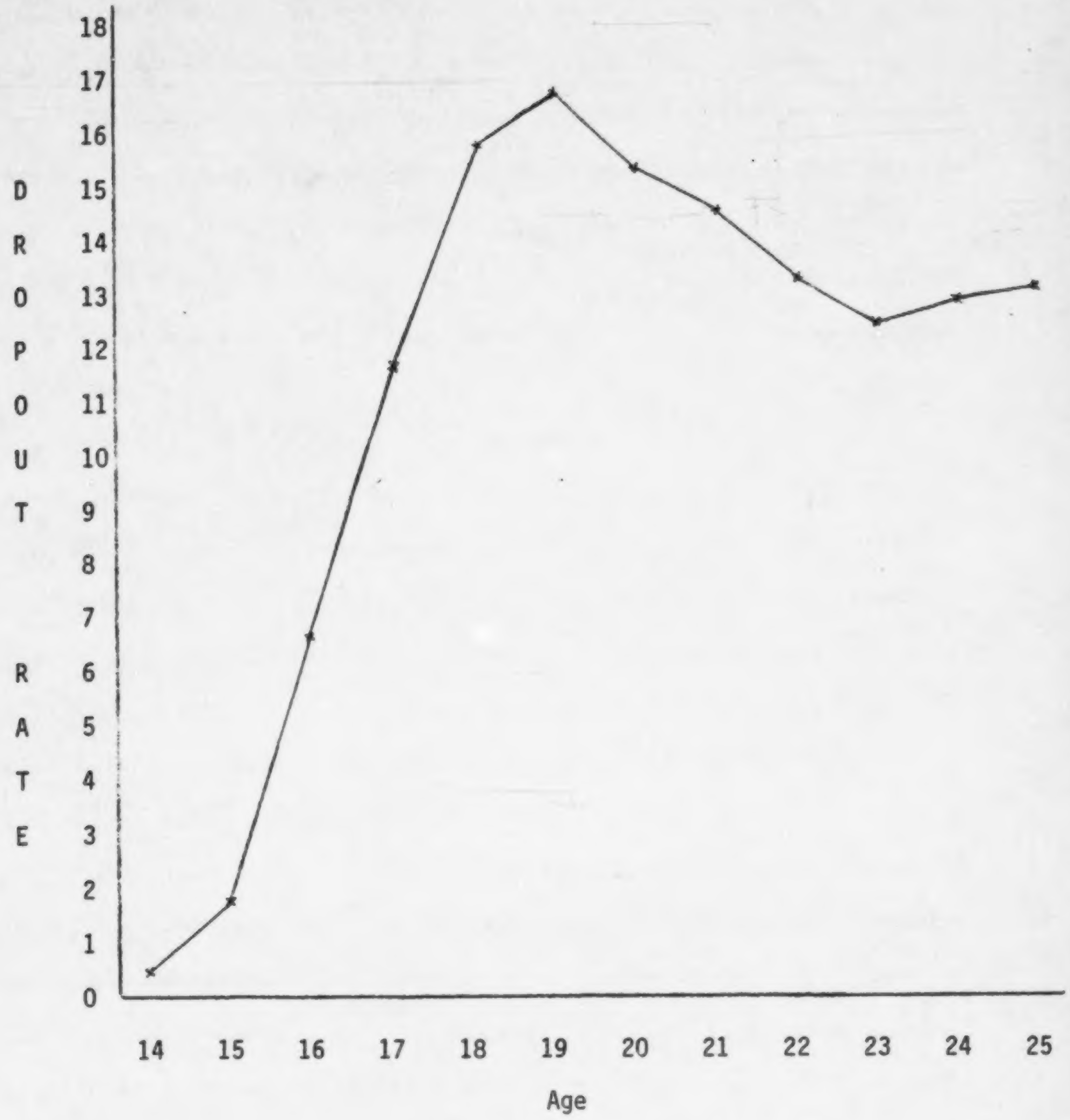

Figure 6.1 Age-Specific Dropout Prevalence in the Youth Cohort, Averaged over 1979-1982 Survey Years (See Table 5A.1 for the prevalence percentages in each year).

tion. School authorities generally are reluctant to permit youth to take the GED as a means of early graduation, and so set a minimum age qualification. These GED-takers steadily lower the pool of dropouts until about age 22, after which the dropout prevalence rate becomes relatively stable.

Besides denoting key benchmarks in dropout prevalence variation, the dropout rates at age 17, 19, and 22 also convey quite different policy implications. For the average American youth, reaching age 17 means one has one last year of high school to complete. Age 19 typically is the first full year out of high school, and 22 is the first year in the adult labor market. The age 17 rate is the proportion of early leavers, youth who could and normally would still be in regular high school. This rate averaged 11.7 percent over the first four years of the survey. It is an upper limit on the proportion of school-age youth for whom incentives for regular school reenrollment might be provided as an alternative to underemployment, delinquency, or premature household activity.

Dropout prevalence among 19 year olds, averaging 16.8 percent, reflects the total proportion of all leavers for whom regular schooling for one reason or another did not work. This proportion includes the nonreturning early leavers plus those youth who simply did not finish. By definition, nonfinishers are dropouts who leave school at or after the time point when their age cohort graduates, as opposed to before. These youth would be the maximum proportion who would be eligible to finish their secondary education by means of some alternative to regular schooling. Presumably most of the nonfinishers would require special or remedial education.

Dropout prevalence at age 22, averaging 13.3 percent, indicates the proportion of new young adults unable to compete with minimum certification standards in the adult labor market. These are the youth who four years after their normal age of high school graduation have not completed sufficient remedial schooling to receive a GED qualification. Dropouts at this age, as opposed to the younger early leavers and the nonfinishers, are more permanent, and are most appropriately characterized as the undereducated. This proportion identifies the pool of young adults whose human capital job qualifications could be immediately assisted by compensatory training opportunities.

In planning such training, one might want to differentiate between those undereducated youth who originally were early leavers and those who were nonfinishers. Table 6.5 shows the distribution of age of first dropping out for all 1982 dropouts aged 20 or older. Approximately half, 52 percent, were early leavers, having first dropped out before age 18. Falling more into the nonfinisher category were the 28 percent who dropped out during age 18 and the 20 percent who first dropped out at age 19 or later.

III. SEX, ETHNIC, AND REGIONAL VARIATIONS IN DROPOUT PREVALENCE

The aggregate statistics presented so far have summarized the overall tendencies in the cohort to move across the four basic educational status categories. Substantial numbers of youth will remain dropouts at least into young adulthood and their early labor market experience. For a significant minority, dropout status represents only a temporary delay in educational progression. Whether youth who terminated or delayed their education did so intentionally or otherwise may not be an answerable question; nor can one be very precise about the factors involved in the decisions of those who return. What can be shown here is the substantial differences in the scope and permanence of dropping out across sex, ethnic and regional groupings of youth. It can hardly be emphasized enough that one current gauge of the success of the American educational system is the extent of its ability to minimize such variation. It is still the basic presupposition for improved equality of access to the labor market.

Table 6.5 Age of First Dropping Out, for All 1982 Dropouts Aged 20 or Older, by Age in 1982.

Dropout age	Age in 1982[a]		
	20-22	23-25	Total
16 or younger	25.4%	24.8%	25.2%
17	29.2	22.8	26.8
18	28.3	27.2	27.9
19	14.6	18.8	16.2
20 or older	2.5	6.4	4.0
Total	100.0%	100.0%	100.0%
n	811	446	1,257
N (thousands)	1,690	1,030	2,720

[a] Age in this table is reported age at spring interview date, not January 1 age.

Figure 6.2 graphs the age-specific dropout prevalences over the span from age 17 to 22, separately for males and females and for Hispanic, black and white youth. Table 6.6 gives the corresponding percentage values in tabular form. As in Figure 6.1, these age-specific rates are averaged over the first four survey years. Possible interactions between sex and ethnicity in prevalence trends are not examined. In general, the overall sex variation in prevalence is substantially smaller than the ethnic variation. The male rate averaged only two points higher than the female rate over the entire age span. This difference primarily reflects the larger proportion of nonfinishers among males. The early leaver rates, as indexed by the age 17 prevalence rates, are nearly identical (.1 percentage point apart) whereas the age 19 rates are 4 points different. Both males and females show a 4-point decline in prevalence over the age span 19 to 22, indicating equal tendencies for delayed completion and GED certification. It thus appears that reducing the higher proportion of male nonfinishers would eliminate the sex difference in dropout prevalence altogether.

The ethnic group variation in dropout prevalence is characterized by two main tendencies. First is the substantial difference in overall magnitude, ranging from a low of 12.9 percent for whites to 19.4 percent for blacks and 32.4 percent for Hispanics. Second is that the curvilinear age trend operates in the manner of Figure 6.1 only for white youth. Instead of peaking at age 19, the dropout prevalence for blacks and Hispanics merely flattens out at this point, showing some slight decline only after age 21.

The proportion of early leavers, as indexed by the age 17 rate is identical for whites and blacks, but 10 points higher for Hispanics. By age 19, when nonfinishers are included in the dropout rates, blacks are 7 points higher than whites and Hispanics are 20 points higher in dropout prevalence. By age 22 the minority differences are three points greater than

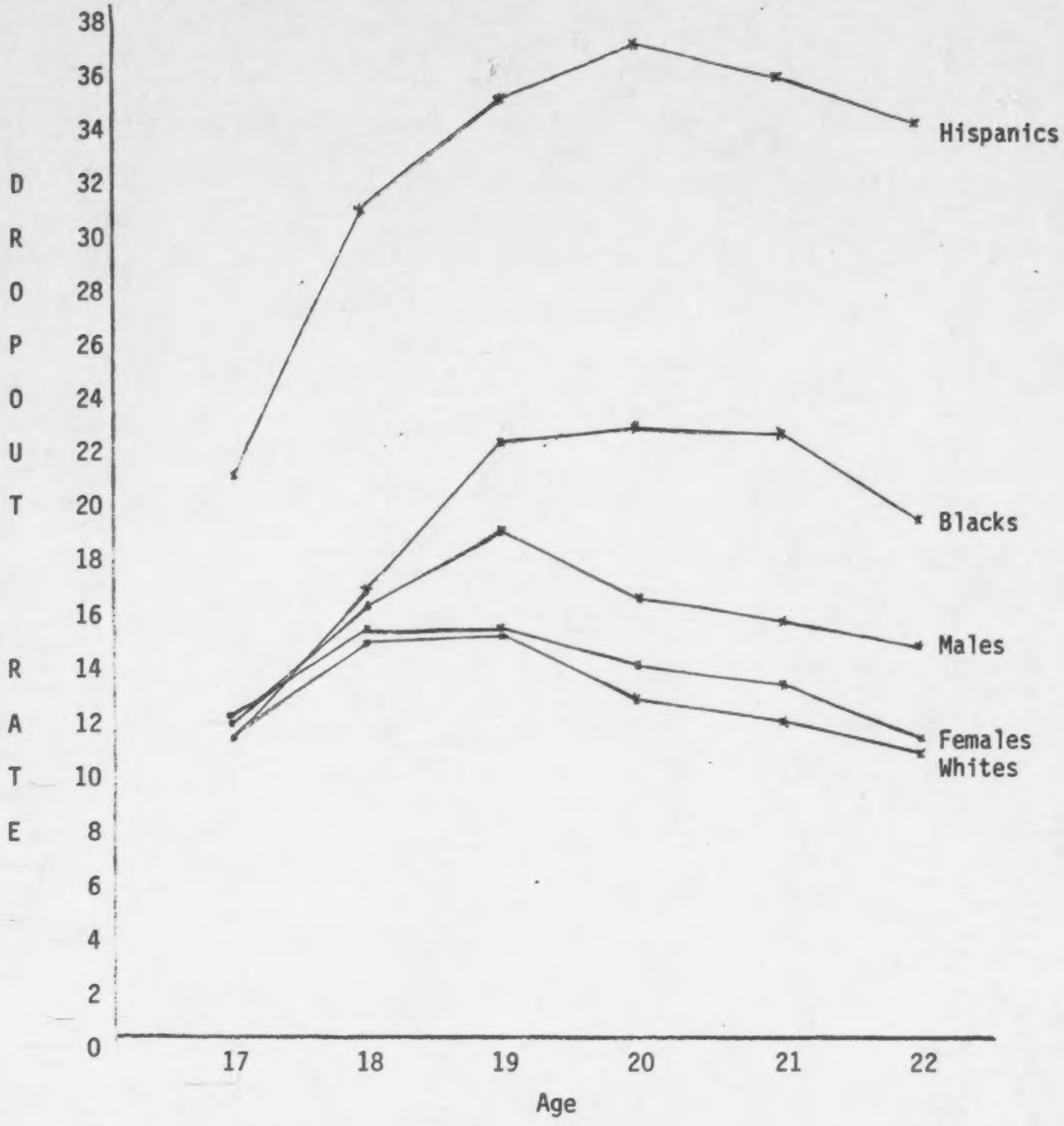

Figure 6.2 Average Age-Specific Dropout Prevalence in the Youth Cohort, by Sex and Ethnicity.

Table 6.6 Age-Specific Dropout Rates by Sex and by Ethnicity, Averaged over 1979-1982.

SEX	17	18	19	20	21	22	17-25
Male	11.9%	16.8%	19.0%	16.6%	15.9%	14.8%	15.8%
Female	12.0	15.6	15.3	14.1	13.6	11.5	13.7
ETHNICITY							
Black	11.4	17.4	22.3	22.7	22.5	19.7	19.4
Hispanic	21.1	31.0	35.6	36.6	36.0	34.1	32.4
White	11.4	15.0	15.1	12.8	12.1	10.9	12.9
TOTAL	12.0	16.2	17.1	15.4	14.8	13.2	14.8

they were at age 19. This difference reflects both the smaller number of GED finishers among minority dropouts and their larger proportions of older enrollees still at risk of becoming new dropouts. The greater magnitude of the dropout problem among black youth is thus not so much attributable to more leaving early compared with whites than it is to more who do not finish. It is a case of more unsuccessful schooling for blacks rather than of more interrupted schooling for them. The extremely high dropout prevalence among Hispanics reflects the double tendency for high rates both of leaving early and of not finishing. In summary, a relatively greater number of male and minority youth experienced failure-induced protracted enrollment followed by eventual quitting. In addition, the flatter decline for minority youth indicates a smaller proportion go on to achieve GED certification. Becoming a dropout is thus not only more prevalent among minority youth, it is also more likely to become a permanent condition of undereducation.

Dropout prevalence also varies considerably across regions. Only regional variation for whites is reported here, owing to sample size limitations for the other groups. In a nutshell, Table 6.7 shows that dropouts are twice as prevalent among southern white youth as among northern white youth. The rate for western youth is intermediate, just above the national average. This high prevalence figure for southern white youth is approximately equal to the national rate for black youth. The age-specific composition of the overall rates however, are quite different. If one focuses on the age 17, early leaver dropouts only, southern whites average 6 percentage points higher than blacks in overall dropout prevalence. Thus compared with blacks, a larger proportion of southern white dropouts consist of youth who have left school early, there being proportionately fewer unsuccessful finishers. But like their minority counterparts, southern white dropouts have a relatively flat age-trend, indicating their dropout status tends to be permanent also.

Table 6.7 1982 Age-Specific Dropout Rates of the Youth Cohort, by Region, Averaged over 1979-1982 for White Youth.

Region	Age							
	17	18	19	20	21	22	17-22 Average	Total Dropouts (Thous.)
New England	7.7%	14.2%	10.6%	11.8%	12.2%	8.6%	10.8%	160
Middle Atlantic	7.1	10.2	10.3	7.4	5.8	6.0	7.8	310
S. Atlantic	18.1	18.5	20.3	18.8	19.1	17.8	18.8	740
E. S. Central	17.1	20.0	20.8	20.0	22.7	25.4	21.0	300
W. S. Central	13.4	16.3	13.0	13.2	13.3	11.3	13.4	220
E. N. Central	8.7	13.7	13.8	11.4	10.8	8.9	11.2	800
W. N. Central	6.0	8.5	10.0	8.4	8.7	10.4	8.7	170
Mountain	15.1	18.6	20.8	13.7	9.9	7.0	14.2	190
Pacific	13.5	18.8	19.7	15.9	13.0	11.7	15.4	380
U. S. Total	11.4	15.0	15.1	12.8	12.1	10.9	12.9	3,270

IV. THE SOCIAL REALITY OF UNDEREDUCATION

The previous two sections have documented the scope and permanence of dropout status among American youth. Interpretations of the apparent trends were made, but no formal explanations could be provided. This section will examine available evidence on the causes of dropping out, from the social psychological perspective of the expressed reasons given by dropout youth for leaving school. This approach takes at face value the reasons youth give. Table 6.8 groups thirteen categories of reasons into the three basic areas of family-related, school-related and work-related reasons and a residual "other reasons" category. The answers were given by all youth who ever dropped out of high school in the survey year they first reported having done so. These represent 17.5 percent of the cohort, or 5.9 million youth. One million (37 percent) of the 2.7 million female dropouts reportedly did so for family reasons, the respondents citing either pregnancy, marriage, or a more anomalous response about home responsibilities. This response was given by only 5 percent of male dropouts, representing 110,000 out of a total of 3.2 million youth. Instead male dropouts most frequently cited school-related reasons, most indicating they simply disliked school, but others stating they had poor grades or low ability, or that they had been expelled or suspended. A total of 51 percent of male dropouts so responded. A substantial proportion of female dropouts, 33 percent, also cited school-related reasons, making it overall a close second to family-related reasons for them. Work-related reasons were cited second most often by male dropouts, 21 percent, whereas for females this was a distant third, being given only slightly more often (9 percent) than the family-related reasons were by male youths.

If one did interpret these responses literally, then the remedy for dropouts as a social malady would be straightforward, albeit simplistic.

Table 6.8 Reason Given for Leaving High School Without Degree, for All Youth Who Ever Dropped Out, in Year First-Reported Having Dropped Out, by Sex[a]

Reason Given	Female 79 or before	Female 80-82	Female Total	Male 79 or before	Male 80-82	Male Total
A. Family-Related						
Pregnancy	19.1%	11.6%	16.4%	0.0%	.2%	.1%
Marriage	14.3	12.2	13.6	2.2	.1	1.4
Home Responsibilities	6.4	6.9	6.6	4.6	2.1	3.7
Sub-total	39.8	30.3	36.6	6.8	2.4	5.2
B. School-Related						
Disliked School	23.8	24.7	24.1	32.8	23.2	29.2
Low Grades or ability	5.0	3.3	4.4	8.6	9.0	8.8
Expelled or suspended	2.2	1.5	2.0	9.8	10.6	10.1
School too dangerous	1.3	1.4	1.3	6.7	.1	.5
Completed coursework	0.9	1.4	1.1	1.7	3.5	2.2
Sub-total	33.2	32.3	32.9	53.6	46.3	50.8
C. Work-Related						
Chose to work	5.4	7.1	6.1	14.4	13.0	13.9
Financial problem	3.7	1.3	2.8	4.7	5.0	4.8
Entered Military	0.0	.3	.1	2.2	2.9	2.5
Sub-Total	9.1	8.7	9.0	21.3	20.9	21.2
D. Other						
Moved Away	3.4	4.3	3.7	2.8	4.8	3.2
Other	14.4	23.9	17.9	15.4	25.5	19.2
Sub-total	17.8	28.2	21.6	18.2	30.3	22.4
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
N (Thousands)	1,720	990	2,710	1,980	1,190	3,170

[a] Total ever-dropped-out youth is 5,880,000, 17.5% of the cohort.

Remove the family alternative for girls and the employment alternative for boys, and for both improve the satisfaction and meaningfulness of their schooling experience. These are of course only the broadest of policy guidelines, each of which already has been implemented indirectly through detailed programs of social action ranging from pregancy prevention programs to various school-industry cooperative education experiences.

Alternatively, it may be that a direct, literal translation of these self-report statements into policy guidelines is unwarranted. _Post hoc_ motive statements are more properly assessed as social constructions, products of society as much as of individuals. Individual youth base these reasons partly on factual experience, but in good measure also on preferred cultural stereotypes of appropriate accounts (Scott and Lyman, 1968). For both male and female dropouts the single most-cited reason is "disliked school," which is of course an almost universally appropriate response to schooling in the context of American youth culture. Similarly, traditional sex-role definitions make appropriate the second most-cited reasons, pregnancy for girls and choosing to work for boys.

Is the argument then that the real cause of dropping out is cultural traditionality rather than the manifest behavior and attitudes reported by the youth? No. But there may be an important tendency for the act of dropping out to reinforce cultural traditionality, as each generation of dropout youth seeks to justify its low social position with reference to culturally acceptable social patterns. Note that it specifically is the relative deprivation condition of undereducation, not lack of education or ignorance, which is being discussed here. Removing the societal condition of undereducation will reduce teenage pregnancy, the premature need to work, and the distaste for schooling more than vice versa.

The key to understanding the individual behavior of dropping out as a more general societal condition of undereducation is to be aware of its structural rootedness. Like all other advanced industrial societies, American society shows a strong tendency to have the relative educational standing of parents transmitted to their offspring. Tables 6.9 and 6.10 describe the strong relationship, for males and females respectively, between the educational attainments of youth and the education and other socioeconomic characteristics of their parents. Dropout youth have fathers who on average have completed only 9 years of formal education. Terminal graduates have fathers with 11 years, college attenders have fathers with 12 years, and college graduates have fathers with an average of 14 years of education. The means for mother's education level and proportion of fathers and mothers employed in white-collar or blue-collar occupations are ordered linearly across the four educational status categories in the same manner.

Results from more formal causal models of this cross-generational relationship are available elsewhere and so are not duplicated here. See Jencks et al. (1983) and Campbell (1983) for current reviews of this social stratification literature. These models vary in their assumptions regarding the intra-familial social processes by which this intergenerational transmission takes place. Current understanding rests heavily on early conceptualizations of variations in parental encouragement (Kahl, 1953), use of parents as "significant others" for setting one's goals (Haller and Portes, 1973), and taking the family as the primary reference group for projecting one's future position in society (Turner, 1964). With respect to the last explanation, coming from a family where the father has only 9 years of formal education provides a very different perspective on the American opportunity structure than when one's father had 14 years of education.

Such intergenerational causal models are stochastic rather than deterministic, however, meaning that there is some important degree of

Table 6.9 Mean Education, Training, Background, and Location, by 1980 Educational Status, for Male Youth

Enrollment Status (1980)	Non-Enrolled				Enrolled		Total	
Attainment Level (1980)	High School		College					
	Dropout	Grad.	Some	Grad.	H.S.	Coll.	Mean	S.D.
EDUCATION (1980)								
AFQT	49.8	70.7	78.7	91.6	66.9	88.8	70.8	21.9
H.S. Curric.								
Coll. Prep.	.061	.133	.372	.685	.329	.680	.323	.468
Voc., Comm.	.140	.269	.170	.014	.131	.057	.151	.358
General	.636	.576	.440	.301	.529	.245	.492	-
Unclassified	.163	.022	.018	0.0	.011	.018	.034	.182
TRAINING (ever-received, 1980 or before)								
Govt. Prog.	.080	.039	.042	.045	0.0	.013	.025	.156
Other Prog.	.208	.373	.399	.371	.106	.179	.220	.414
Armed Forces	.071	.161	.135	.039	.000	.032	.062	.242
BACKGROUND								
Fa. Educ (yrs.)	9.2	11.3	12.2	13.6	12.1	13.8	11.9	3.6
Mo. Educ. (yrs.)	9.8	11.4	11.8	13.9	11.7	13.0	11.7	2.8
Fa. Emp., W.C.	.103	.215	.390	.619	.306	.569	.319	.466
________, B.C.	.557	.590	.395	.158	.455	.302	.461	.499
Mo. Emp., W.C.	.126	.230	.295	.500	.277	.345	.264	.441
________, B.C.	.335	.241	.176	.068	.240	.114	.222	.416
No. Siblings	4.29	3.40	3.27	2.40	3.16	2.74	3.28	2.31
Ethnicity, Black	.189	.124	.126	.071	.148	.077	.133	.339
________, Hispanic	.108	.032	.058	.032	.051	0.033	.052	.221
LOCATION (1981)								
Region								
Northeast,	.149	.209	.211	.298	.203	.245	.207	.405
North central	.220	.359	.267	.226	.325	.278	.304	.460
South	.448	.276	.309	.282	.310	.313	.320	.467
West	.183	.156	.213	.194	.162	.164	.169	.375
In SMSA	.674	.702	.805	.852	.727	.805	.738	.440
Area UE rate	7.91	8.55	8.02	7.02	8.29	7.79	8.17	2.79
N (Thousands)[a]	2,060	3,480	1,600	180	6,210	2,850	16,360	

[a] Excludes estimated 30,000 (.2%) unclassified male youth.

Table 6.10 Mean Education, Training, Background and Location, by 1980 Educational Status, for Female Youth

Enrollment Status (1980)	Non-Enrolled				Enrolled		Total	
Attainment Level (1980)	High School		College					
	Dropout	Grad.	Some	Grad.	H.S.	Coll.	Mean	S.D.
EDUCATION (1980)								
AFQT	50.1	69.6	77.2	92.3	68.8	85.1	71.1	19.9
H.S. Curric.								
Coll. Prep.	.068	.138	.371	.696	.311	.567	.305	.460
Voc., Comm.	.086	.299	.184	.089	.134	.104	.164	.370
General	.662	.537	.419	.210	.545	.313	.495	.500
Unclassified	.184	.026	.026	.005	.010	.016	.036	.186
TRAINING (ever-received, 1980 or before)								
Govt. Prog.	.063	.048	.052	0	.002	.032	.030	.170
Other Prog.	.143	.339	.402	.269	.104	.244	.222	.416
Armed Forces	.003	.014	.021	.003	.000	.004	.007	.082
BACKGROUND								
Fa. Educ (yrs.)	9.4	10.7	12.2	14.4	11.9	13.5	11.8	3.6
Mo. Educ. (yrs)	9.3	11.0	12.0	13.1	11.7	12.8	11.5	2.8
Fa. Emp., W.C.	.119	.222	.339	.694	.293	.477	.303	.459
________, B.C.	.519	.555	.438	.214	.436	.340	.450	.498
Mo. Emp., W.C.	.112	.232	.283	.270	.303	.327	.267	.442
________, B.C.	.324	.263	.201	.090	.263	.160	.242	.428
No. Siblings	4.46	3.61	3.31	2.77	3.24	2.93	3.41	2.31
Ethnicity, Black	.162	.116	.145	.040	.148	.130	.138	.344
________, Hispanic	.124	.040	.045	.028	.056	.034	.055	.228
LOCATION (1981)								
Region								
Northeast	.122	.208	.204	.213	.199	.237	.200	.400
North central	.241	.332	.259	.154	.302	.282	.290	.454
South	.437	.309	.330	.503	.348	.329	.347	.476
West	.200	.151	.207	.130	.151	.152	.163	.369
In SMSA	.715	.689	.796	.835	.745	.817	.750	.433
Area UE rate	8.17	8.29	7.79	7.06	8.12	7.91	8.07	2.67
N (Thousands)[a]	1,820	3,460	1,860	260	5,720	2,870	16,000	

[a] Excludes estimated 20,000 (.1%) unclassified female youth.

probability that one's relative level of educational attainment will exceed one's parents. According to previous research, exceeding parental education comes primarily because of an extra amount of parental encouragement, or better-than-expected academic performance, or both. The solution to undereducation historically in American society has been defined only at this individual level, and that is simply to encourage individuals to acquire more and better education. As long as each individual has a reasonable opportunity to get and use education as a means for intergenerational upward social mobility, i.e., to improve upon the relative social position of one's parents, we have tended to say the system is working. Thus social legislation has been directed toward guaranteeing equal access to a quality education, at least through the secondary level and increasingly to the post-secondary as well. The frontier of controversy over equal access now resides predominantly at the highest and costliest levels of formal education, the professional schools.

Not everyone, of course, endorses this solution. Collins (1979) refers to it pejoratively as the American practice of credential capitalism, which leads to credential inflation and the societal condition of overeducation. There is less policy controversy, however, at the lower end of the education scale. Increasingly a high school education is the minimum qualification for a job of any type, and hence is considered the educational floor upon which each youth should stand. At this level, there is very little quarrel with the argument that guarantees of universal access should be coupled with a strong commitment to universal attainment.

We have seen that there still exists a substantial overrepresentation of dropouts among the black and Hispanic youth in our 17-24 year old cohort. The continuing high proportions of early leavers, nonfinishers, and undereducated youth among them indicates a legitimate, addressable social problem. If one opts to deal with the problem at the level of the individual dropout, this returns us full circle to our reasons for dropping out analysis. For girls recall that this analysis suggested the risk of dropping out could best be lowered first by reducing the immediacy of the family option for them (teenage pregnancy) and second by increasing satisfaction with school. For boys, increasing satisfaction with school was the first priority, reducing the work option was the second. The specific analytic and policy issues surrounding teenage pregnancy and teenage employment are extremely complex and cannot be adequately addressed in this paper. With regard to teenage employment, for example, we still have an unclear understanding of what types and amounts impede successful school performance, and what facilitates performance. D'Amico has presented a detailed analysis of this problem in an earlier chapter of this volume. In the remainder of this chapter we shall instead focus on the school satisfaction option.

Increasing school satisfaction can be addressed at two levels. First is to improve the quality of student life, striving to make the day-to-day experience of schooling more enjoyable. Suggestions on how and how not to do this are presented elsewhere (Epstein, 1979; Morgan, 1983). Second is to increase the meaningfulness of schooling. In a strictly pragmatic sense, youth may need to be better convinced that schooling is worthwhile, that it has some relatively immediate monetary payoff. Aside from quality of student life issues, most youth could probably at least endure school if they believed its completion would bring a sufficient increase in earnings to justify whatever psychic costs the rigors of the classroom may entail. And if there is a reasonable monetary return, how much comes from increased rate of employment and how much from a higher wage rate? While both are important, the higher wage rate may be a more critical incentive for many. The final section of this chapter attempts to provide some current answers to these questions.

V. THE EARLY LABOR MARKET RETURNS TO HIGH SCHOOL COMPLETION

The rationale for this closing analysis rests on the assumption that a primary incentive for dropout-risk youth to complete their high school education is the knowledge that they will be able to use it to advantage in the labor market. It is therefore important to determine to what degree, if at all, high school completers do have more success in the labor market than dropouts. Since dropout-risk youth tend to come from families with a history of undereducation, it is reasonable to assume that imperfect information about the education-employment relationship is in fact more widespread among them.

Alternatively, these results could show that in our overeducated society a terminal high school degree does in fact have little labor market value in iteslf. If this were the case, youth with no college plans might do better to forego the formalities of a high school education and proceed directly to get a headstart in the labor market. A second and perhaps more plausible alternative is that, because of employer discrimination and other aspects of differertial opportunity, the labor market value of terminal high school graduation systematically varies across the youth population, tending to be lower for ethnic minorities. If this were the case, then the higher dropout prevalence among them would constitute a realistic response to these differential returns rather than a greater degree of imperfect information among them.

These uniform high returns, uniform low returns, and variable returns hypotheses were analysed looking at the 1981-82 civilian labor market experiences of all youth in the cohort who were high school leavers with no college experience as of 1980. Youth in the military during 1981-82 were excluded. This sample totalled 3,697 respondents, representing approximately 33 percent of the population cohort (see Table 6.1). All analyses were conducted separately for male and female youth. Five measures of labor market activity were each regressed on a basic linear additive OLS-estimation equation which contained a dummy variable for high school completion and 19 other variables hypothesized to be causally related to labor market success. These variables measure six basic domains: quality of secondary schooling (2), job-training experience (3), family background (6), geographic location of labor market activity (3), prior labor market experience (2), and current household activity (3). Tables 6.9-11 present the means across six educational status categories, including dropout and terminal graduates, for each of these variables, separately by sex.

Schooling quality was assessed by the youths' scores on the AFQT test and their high school curriculum enrollment. The AFQT is a 105-point test of verbal and quantitative cognitive skills administered to all (93.6%) youth in the summer of 1980 (Bock and Mislevy, 1981). Even though the test was taken after the youth had terminated their schooling, scores on the test reflect predetermined ability and family background enrichment experiences as well as school achievement. It is a measure of schooling quality in the sense that, in relation to the school completion variable, it measures how much basic learning one has acquired independent of one's certification level. The two, however, tend to covary. Dropouts score one standard deviation (20 points) lower than terminal high school graduates, and two standard deviations (42 points) lower than college graduates. To the extent AFQT measures the cognitive-based human capital gain from schooling, the completion variable net of AFQT then becomes a measure of the certification value of finishing high school.[4]

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[4] The strictly exogenous interpretation of AFQT in relation to schooling would be that it measures the cognitive ability necessary for academic success. It would thus be a measure of the fixed rather than malleable component of human

Table 6.11 Mean Household and Labor Market Activity, by 1980 Educational Status, for Civilian Male (and Female) Youth 17-24 in 1982.

Enrollment Status	Non-Enrolled				Enrolled			
Attainment Level	High School		College					
	Dropout	Grad.	Some	Grad.	H.S.	Coll.	Total	S.D.
Household Activity (1982)								
Married, spouse-present	.290 (.460)	.330 (.503)	.269 (.452)	.367 (.460)	.027 (.105)	.132 (.154)	.170 (.286)	.376 (.452)
Children	.365 (.691)	.236 (.451)	.195 (.358)	.141 (.182)	.027 (.096)	.044 (.080)	.135 (.269)	.341 (.444)
Health-Impaired	.057 (.125)	.048 (.076)	.053 (.079)	.030 (.028)	.029 (.060)	.022 (.037)	.038 (.069)	.190 (.253)
Labor Market Experience (1981)								
Years out-of-school	3.94 (4.07)	3.47 (3.70)	2.41 (2.62)	1.77 (1.68)	.20 (.19)	.23 (.31)	1.60 1.72)	2.02 (2.13)
Mo.'s. tenure, curr./last job	12.7 (6.5)	19.9 (16.2)	17.8 (15.4)	12.2 (14.4)	9.9 (7.3)	15.3 (12.1)	14.1 (11.1)	18.1 (13.8)
Labor Market Activity (1982)								
Wks. employed	33.7 (16.6)	41.0 (34.3)	42.0 (37.9)	48.2 (44.9)	28.2 (25.5)	33.5 (34.6)	34.1 (29.8)	19.5 (21.2)
Wks. unemployed	9.98 (5.99)	5.64 (3.33)	3.70 (2.78)	2.03 (.77)	5.74 (4.66)	2.64 (2.49)	5.47 (3.86)	10.96 (9.44)
Duncan SEI, curr./last job	19.7 (25.3)	26.7 (37.1)	31.2 (42.6)	58.5 (58.7)	22.6 (32.9)	39.8 (43.7)	27.5 (37.1)	19.0 (19.8)
Wage rate, curr./last job	5.47 (3.97)	6.52 (4.69)	6.85 (5.21)	9.73 (6.21)	4.18 (3.68)	5.88 (4.98)	5.48 (4.44)	3.07 (2.19)
Annual earnings	6,610 (2,050)	9,700 (5,800)	10,280 (6,860)	17,290 (10,700)	3,600 (2,580)	6,290 (5,290)	6,830 (4,480)	7,190 (4,980)

High school curriculum is represented by three dummy variables that measure the mix of academic and applied courses taken by the youth. Based on self-reports, youth were placed into college preparatory, general, vocational/commercial, or unclassified categories, using general as the referent category. Net of AFQT and high school completion, having been in the college preparatory curriculum may have some status enhancement value in the labor market. Armed with more "cultural capital" (Dimaggio, 1981), such youth are better able to convey an image of learnedness to potential employers. Dimaggio (1981: 198) argues that cultural capital is especially important for women, whose "contingent careers" make it more likely that they will be "evaluated and rewarded on the basis of ascriptive and diffuse criteria." Presumably this effect should operate even if one does not use one's college preparation for actual college attendance. For both sexes only 6 percent of dropouts and 13 percent of terminal graduates took the college preparatory curriculum, compared with 69 percent of the college graduates. By contrast, the pragmatic skills gained in the vocational-commercial curriculum might be put to more immediate advantage by males. Fourteen percent of the male and 8 percent of the female dropouts took this curriculum, compared with 27 percent and 30 percent of the male and female terminal graduates, respectively.

Training was assessed by three dichotomous variables indicating whether the youth had ever participated by 1980 or previously, regardless of duration, in three forms of job-training opportunities--government-sponsored programs (CETA, Job Corps, etc.) other nongovernment training programs (technical institutes, beauty schools, company training, etc.) and the military service. These forms represent the major institutional alternatives or

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capital each youth possesses. The high school completion variable in turn would measure both human capital acquisition and certification gains, rather than primarily the latter as argued above. Evidence contrary to this exogenous interpretation is presented elsewhere (Morgan, 1983).

supplements to regular schooling for human capital development in undereducated youth. The training varies, however, in its certification value, and in its particular emphasis on the noncognitive and more specialized vocational aspects of human capital. Sixteen percent of the male terminal gradutes and 7 percent of male dropouts had military experience, compared to under one percent for females. Participation in government training was more uniform, averaging close to 6 percent for males and females in both education categories. The highest levels of participation were in the other training programs. They ranged from 20 percent and 14 percent of male and female dropouts to 35 percent and 34 percent of male and female terminal graduates, respectively. The general expectation was that participation in any of these three forms of training would boost labor market activity. Since no efforts were made to measure the intensity or duration of this participation, however, any finding of training effects that runs contrary to previous research must be considered with the appropriate cautions. In the logic of the present analysis, they were introduced primarily as control variables.

The six background variables include father's and mother's education, each coded in years and also their occupations when the youth were fourteen years old. These measures were operationalized as dummy variables for white-collar or blue-collar positions, using not employed as the referent category. The other two variables were number of siblings and ethnicity, which was dummy-coded as black, Hispanic, or white, with the latter the referent category. Based on the social stratification literature already cited, we expected that background advantage would also augment labor market activity, independent of its primary effect via boosting educational attainment. The three location variables controlled for local variations in labor market demand. They measured the youths' labor market activity according to census regions (Northeast, North Central, South, or West, with the latter the referent category), whether it occurred within a metropolitan area (SMSA), and the unemployment rate of the area, or of the state if residence was outside a metropolitan area.

Two measures of labor market experience were number of years prior to the 1981 interview the youth had been out of school and number of months if any the youth had worked for the same employer. This second measure of job tenure was constructed from youths' reports of the current or last job held in the 1981 interview and in earlier interviews. Both variables were expected to have substantial positive effects on labor market monetary returns. Time in the labor market and job tenure theoretically are negatively related to educational attainment, representing the opportunity costs of continuing one's education. This omission from the equation would thus be expected to bias downwards the direct returns to high school completion. Examination of the means, however, makes questionable whether high school completion has any such opportunity costs. Dropouts average only a half-year longer out of school than terminal graduates (recall that relatively few dropouts are actually early leavers), and dropouts' job tenure is actually lower by six months for males and ten months for females.

The three household activity variables were marital status, a dummy variable coded one if respondent was married in 1982 and living with spouse; children, also dummy-coded to one if respondent had any children in 1982; and if a health problem in 1982 prevented or limited their working for pay. These variables were expected to uniformly lower female labor market activity, and, except for health impairment, to have positive effects for males, corresponding to traditional homemaker-breadwinner sex role behavior.

Before presenting the main results, we distill the nearly 500 mean values in Tables 6.9-11 to suggest three basic points. First, the substantial differences between dropouts and terminal graduates in each of the six domains as well as in labor market outcomes highlight the importance of using a fully-specified equation in order to generate an unbiased estimate of the labor market returns to high school completion. It is crucial that this estimate be net of all these other differences between dropouts and graduates. Second, these mean differences between dropouts and terminal graduates look small when viewed from the perspective of the even larger differences between them and the rest of the youth population. Estimation of the labor market returns to schooling in our restricted population is a purposely selective analysis which should not be construed as an estimate of the returns to education in the full youth population. They provide at best a lower-bound estimate of these returns to higher levels of education. Besides not being of immediate concern here, such returns cannot yet be properly assessed due to the age of the cohort. And third, the substantial similarities between male and female youth in human capital (education, training, and background) contrasts markedly with the strong differences between them in relative amounts allocated to household and labor market activity. These traditional sex-role differences are especially strong among dropout youth. It will thus be of additional interest to analyze whether or not the lower amounts of human capital which young women do invest in the labor market permit the same rate of return as for their male counterparts. This question is separate from the high, low, and variable returns hypotheses already posed. No advance prediction is made, since the previous literature tends to be inconsistent on this issue (cf. Mott, et al., 1983).

Table 6.12 reports the basic earnings equation for male and female youth. Achieving high school graduation by 1980 or before was worth an extra 1500 dollars in 1981 earnings for females and 1600 dollars more for males. Both net values are highly significant, in support of the high returns hypothesis. Their near equivalence across sex indicates that at least at the

Table 6.12 Regression of 1981 Earnings on Basic Model of Human Capital, Labor Market, and Household Determinants, for Civilian Youth 17-24 in 1982 Who Were High School Terminal Graduates or Dropouts by 1980 or Before, by Sex

Explanatory Variable	Females		Males	
	b	(t)	b	(t)
Education				
Graduate	1490*	(7.03)	1630*	(4.22)
AFQT	33.9*	(6.10)	35.5*	(3.80)
H.S. Curr.(Gen.)				
College Prep.	1080*	(3.97)	263	(.500)
Voc., Comm.	115	(.538)	498	(1.28)
Unclass.	25.3	(.076)	-359	(-.581)
Training				
Government	-209	(-.574)	-900	(-1.35)
Other	670*	(3.50)	811*	(2.34)
Armed Forces	-11.7	(-.010)	-1405*	(-2.28)
Background				
Fa. Educ. (yrs.)	30.2	(.902)	134*	(2.13)
Mo. Educ. (yrs.)	-45.8	(-1.14)	34.1	(.421)
Fa. Emp., W.C.	338	(1.27)	2050*	(3.97)
________, B.C.	316	(1.61)	1560*	(4.16)
Mo. Emp., W.C.	-600*	(-2.57)	358	(.841)
________, B.C.	152	(.789)	30.8	(.083)
No. siblings	-37.5	(-1.02)	114	(1.72)
Ethnicity, Black	221	(.758)	-1590*	(-3.00)
_________, Hispanic	294	(.796)	-329	(-.443)
Location				
Region (West)				
Northeast	-730*	(-2.53)	-976	(-1.80)
North Central	-544*	(-2.06)	-1340*	(-2.66)
South	-275	(-1.05)	-518	(-1.02)
In SMSA	675*	(3.38)	676	(1.91)
Area UE	-13.9*	(-3.84)	-19.1*	(-2.98)
Experience				
Out-of-School, Yrs.	72.2	(1.66)	339*	(3.72)
Job Tenure, Mos.	87.2*	(15.5)	97.0*	(11.6)
Household Behavior				
Married	603*	(3.29)	2580*	(6.81)
Children	-2810*	(-14.5)	192	(.495)
Health-Impaired	-1250*	(-4.41)	-3060*	(-4.51)
Constant	2760		706	
R^2	.418		.270	
n	1,897		1,751	

*p <.05

level of high school education and at this early point in the age-earnings profile, females are nearly as able as males to convert their education into earnings, even though they have a lower tendency to do so. Another useful metric for assessing the magnitude of these net earnings returns to education is as a proportion of the average gross earnings difference between terminal graduates and dropouts, this being 3090 dollars and 2750 dollars, respectively, for males and females (Table 6.12). Becoming a graduate thus accounts for 53 percent of the gross earnings difference for males, and 54 percent of the difference for females. High school completion, net of what it does for raising youths' human and cultural capital, and after controlling for all other nonschool differences between dropouts and completers, does substantially boost the earnings of youth. Conversely, carrying the label of high school dropout was a serious handicap, at least in the loose youth labor market of 1981.

The other two schooling variables also showed significant effects on earnings, but in absolute terms they were not as large as the high school completion effect. If dropouts were to increase their human capital, as measured by AFQT, to the same level of terminal graduates' (a 20 point increment), for both males and females the resulting gain in earnings would be only about 700 dollars. The high school curriculum effect varied by sex, in support of the cultural capital hypothesis. For females, taking college preparatory instead of general courses was worth an extra 1100 dollars in earnings, whereas for males such courses in themselves had no additional value. Taking vocational or commercial courses had no additional earnings value for either sex. In summary, completing high school in itself brings substantial immediate earnings returns. And to a lesser degree, the direct gains in human capital and cultural capital which occur from completing high school also bring positive earnings returns.

In general, the other variables included in the basic equation had their hypothesized effects on labor market activity, with few surprises. One mild surprise though was that of the three forms of alternative training measured, only the "other training" category had consistent positive effects on labor market activity. This finding tends to further magnify the importance of regular high school completion.

Before proceeding to the next analysis, one methodological issue must be considered. These earnings equations have been estimated on an unrestricted sample universe of all youth who were dropouts or terminal graduates by 1980, including 8 males (.05% of the total males) and 352 females (18.6% of the total females) who reported no weeks in the civilian labor force in the 1981-82 interview year and another 178 males (10.2%) and 255 females (13.4%) who had zero earnings in 1981. From the perspective of orthodox economic theory this strategy results in a confounding of supply and demand effects, in that the variables in the equation are operating both on the employees' decision to work and on the value of that work to employers. More recent economic work on job search and reservation wage behavior, however, suggests that in reality supply and demand decision-making are not nearly as independent as orthodox theory assumes. Moreover, in this analysis, such confounding permits a useful estimate of tha total value for youth of high school completion, as it operates jointly through supply and demand factors. These factors are then examined more independently next, in the separate employment duration and wage rate equations.

These theoretical preferences notwithstanding, the earnings equations were also estimated in the more conventional manner to check the stability of the estimates. When youth with no weeks in the labor force are excluded, the earnings increment from high school completion becomes 1,601 dollars for males and 1,738 dollars for females. When youth with zero earnings are also excluded, the earnings increment is 1,687 dollars for males and 1,655 dollars for females. Thus, whichever approach one uses, the basic conclusion is the same. For male and female youth the overall earnings return from high school completion was substantial and nearly equivalent for both.

Regressions were estimated next for the separate employment duration and remuneration components of annual earnings. Which component is most affected by high school completion could have a substantial bearing on any policy recommendations. If high school completion raises earnings by facilitating more regular employment, but does not increase the wage rate or status of the job one can command, this could in fact be a disincentive to high school completion. The prospect of steady employment in low-paying, menial jobs may instead encourage activity in nonwork, nonschool domains which can provide more satisfying means of income production. Alternatively, any reasonable increase in the wage rate or status level of jobs that ensues from high school completion ought to increase the desirability of finishing school. This hypothesis is a variation on the economists' substitution effect principle. Instead of a higher wage rate producing more work activity among adults, the suggestion here is that among dropout-risk youth knowledge of a conditionally higher wage rate should increase schooling activity, in order to satisfy the condition of high school completion. It is therefore important to determine whether the earnings gain from high school completion has its origin primarily in an increase in job status and wage rate, in employment duration, or in both.

Tables 6.13-16 present these results.[5] Employment duration (Tables 6.14

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[5] These analyses raise the issue of possible sample selection bias. The position taken was that owing to the relatively small sample attrition from the annual earnings equation to the wage equation (11 percent for males, 32 percent for females), no Heckman correction for selectivity bias was necessary. A partial confirmation of this position is provided by the results

Table 6.13 Regression of 1982 Employment Duration on Basic Model, for Civilian Youth 17-24 in 1982 Who Were Terminal High School Graduates or Dropouts by 1980, Females

Explanatory Variable	Wks. Employed		Wks. Unemployed	
	b	(t)	b	(t)
Education				
Graduate	7.26*	(7.12)	-1.78*	(-2.93)
AFQT	.126*	(4.69)	-.013	(-.838)
H.S. Curr.(Gen.)				
College Prep.	3.11*	(2.37)	-1.39	(-1.76)
Voc., Comm.	.218	(.212)	-.935	(-1.52)
Unclass.	-1.80	(-1.12)	-1.21	(-1.26)
Training				
Government	1.47	(.831)	-.245	(-.231)
Other	1.84*	(1.99)	-.152	(-.274)
Armed Forces	-2.10	(-.366)	.149	(.043)
Background				
Fa. Educ. (yrs.)	.174	(1.07)	-.000	(-.001)
Mo. Educ. (yrs.)	-.075	(-.388)	-.108	(-.933)
Fa. Emp., W.C.	2.31	(1.80)	-.776	(-1.01)
________, B.C.	2.21*	(2.33)	-.146	(-.258)
Mo. Emp., W.C.	-2.10	(-1.86)	.708	(1.05)
________, B.C.	2.85*	(3.06)	-.737	(-1.32)
No. siblings	-.349*	(-1.98)	.075	(.705)
Ethnicity, Black	-1.14	(-.816)	3.21*	(3.83)
_________, Hispanic	1.24	(.698)	-.771	(-.724)
Location				
Region (West)				
Northeast	-2.10	(-1.51)	1.24	(1.49)
North Central	-1.81	(-1.42)	1.29	1.69)
South	.078	(.061)	-.383	(-.508)
In SMSA	1.33	(1.38)	-.446	(-.776)
Area UE	-.083*	(-4.76)	.021*	(2.03)
Experience				
Out-of-School, Yrs.	.157	(.747)	-.018	(-.147)
Job Tenure, Mos.	.353*	(12.9)	-.071*	(-4.33)
Household Behavior				
Married	-3.51*	(-3.97)	-1.76*	(-3.33)
Children	-15.4*	(-16.5)	-1.04	(-1.86)
Health-Impaired	-7.55*	(-5.51)	.842	(1.03)
Constant	25.2		7.96	
R^2	.414		.057	
n	1,912		1,912	

*p < .05

Table 6.14 Regression of 1982 Employment Duration on Basic Model, for Civilian Youth 17-24 in 1982 Who Were Terminal High School Graduates or Dropouts by 1980 or Before, Males.

Explanatory Variable	Wks. Employed		Wks. Unemployed	
	b	(t)	b	(t)
Education				
Graduate	3.19*	(3.33)	-1.67*	(-2.33)
AFQT	.123*	(5.28)	-.058*	(-3.31)
H.S. Curr.(Gen.)				
College Prep.	.443	(.337)	-.613	(-.622)
Voc., Comm.	.041	(.042)	-.331	(-.452)
Unclass.	-1.77	(-1.15)	-1.47	(-1.28)
Training				
Government	-5.11*	(-3.04)	2.11	(1.68)
Other	.428	(.049)	-.248	(-.383)
Armed Forces	-2.82	(-1.84)	.773	(.672)
Background				
Fa. Educ. (yrs.)	.010	(.063)	-.101	(-.859)
Mo. Educ. (yrs.)	.104	(.512)	.063	(.416)
Fa. Emp., W.C.	4.26*	(3.33)	-3.68*	(-3.84)
________, B.C.	2.73*	(2.91)	-2.37*	(-3.37)
Mo. Emp., W.C.	.381	(.359)	-.606	(-.761)
________, B.C.	-.304	(-.329)	.282	(.407)
No. siblings	.083	(.503)	-.067	(-.541)
Ethnicity, Black	-3.82*	(-2.90)	1.01	(1.02)
________, Hispanic	.330	(.179)	-1.02	(-.740)
Location				
Region (West)				
Northeast	1.11	(.820)	.436	(.429)
North Central	-.092	(-.073)	3.01*	(3.21)
South	3.75*	(2.97)	-1.29	(-1.36)
In SMSA	.570	(.643)	-2.07*	(-3.12)
Area UE	-.072*	(-4.54)	.040*	(3.36)
Experience				
Out-of-School, Yrs.	.378	(1.67)	.335*	(1.97)
Job Tenure, Mos.	.172*	(8.21)	-.120*	(-7.61)
Household Behavior				
Married	5.00*	(5.26)	-2.22*	(-3.11)
Children	-2.62*	(-2.70)	3.93*	(5.39)
Health-Impaired	-9.68*	(-5.73)	-.345	(-.272)
Constant	25.4		13.1	
R^2	.207		.138	
n	1,785		1,780	

*$p < .05$

Table 6.15 Regression of 1982 Duncan SEI and Wage Rate (Ln) of Current or Last Job on Basic Model, for Civilian Youth 17-24 in 1982 Who Were Terminal High School Graduates or Dropouts by 1980 or Before, Females

Explanatory Variable	Duncan SEI		Ln Wage	
	b	(t)	b	(t)
Education				
Graduate	6.45*	(5.01)	.057	(1.71)
AFQT	.137*	(4.04)	.004*	(4.07)
H.S. Curr.(Gen.)				
College Prep.	.890	(.584)	.067	(1.75)
Voc., Comm.	2.88*	(2.34)	-.030	(-.940)
Unclass.	1.52	(.674)	-.057	(-.989)
Training				
Government	1.19	(.545)	-.097	(-1.75)
Other	3.25*	(2.96)	.086*	(3.07)
Armed Forces	-11.0	(-1.74)	-.309	(-1.68)
Background				
Fa. Educ. (yrs.)	.168	(.803)	.004	(.815)
Mo. Educ. (yrs.)	.307	(1.23)	-.015*	(-2.38)
Fa. Emp., W.C.	3.90*	(2.48)	.077	(1.90)
________, B.C.	2.43*	(2.00)	-.030	(-.976)
Mo. Emp., W.C.	-1.12	(-.822)	-.050	(-1.42)
________, BC.	-3.17*	(-2.78)	-.013	(-.429)
No. siblings	-.417	(-1.71)	-.004	(-.663)
Ethnicity, Black	.172	(.093)	.083	(1.78)
_________, Hispanic	4.68*	(2.00)	.019	(.322)
Location				
Region (West)				
Northeast	.953	(.572)	-.109*	(-2.59)
North Central	-3.28*	(-2.11)	-.148*	(-3.78)
South	-.490	(-.314)	-.140*	(-3.56)
In SMSA	1.14	(.935)	.037	(1.19)
Area UE	-.064*	(-2.85)	-.000	(-.500)
Experience				
Out-of-School, Yrs.	-.050	(-.179)	.015*	(2.06)
Job Tenure, Mos.	.068*	(2.11)	.005*	(6.21)
Household Behavior				
Married	-.359	(-.330)	-.087*	(-3.14)
Children	-2.76*	(-2.43)	-.102*	(-3.54)
Health-Impaired	-1.91	(-1.07)	-.117*	(-2.56)
Constant	19.2		5.93	
R^2	.145		140	
n	1,314		1,272	

$*p < .05$

Table 6.16 Regression of 1982 Duncan SEI and Wage Rate (Ln) of Current or Last Job on Basic Model, for Civilian Youth 17-24 in 1982 Who Were Terminal High School Graduates or Dropouts by 1980 or Before, Males.

Explanatory Variable	Duncan SEI		Ln Wage	
	b	(t)	b	(t)
Education				
Graduate	1.28	(1.34)	.113*	(3.84)
AFQT	.170*	(7.23)	.002*	(2.74)
H.S. Curr.(Gen.)				
College Prep.	2.80*	(2.16)	-.051	(-1.29)
Voc., Comm.	1.38	(1.43)	-.015	(-.514)
Unclass.	.937	(.604)	-.012	(-.259)
Training				
Government	.987	(.576)	.034	(.650)
Other	2.91*	(3.43)	-.030	(-1.17)
Armed Forces	1.49	(.97)	-.023	(-.477)
Background				
Fa. Educ. (yrs.)	.140	(.892)	.010*	(2.09)
Mo. Educ. (yrs.)	.018	(.089)	-.008	(-1.28)
Fa. Emp., W.C.	2.37	(1.87)	.111*	(2.87)
________, B.C.	-1.21	(-1.29)	.103*	(3.61)
Mo. Emp., W.C.	1.17	(1.11)	.053	(1.64)
________, B.C.	-3.46*	(-3.78)	.041	(1.49)
No. siblings	-.031	(-.190)	.003	(.695)
Ethnicity, Black	2.49	(1.85)	-.079	(-1.91)
________, Hispanic	1.37	(.750)	-.018	(-.324)
Location				
Region (West)				
Northeast	2.64*	(1.98)	-.090*	(-2.19)
North Central	2.26	(1.83)	-.044	(-1.15)
South	3.84*	(3.08)	-.057	(-1.49)
In SMSA	2.74*	(3.13)	.092*	(3.44)
Area UE	.002	(.148)	-.001*	(-2.28)
Experience				
Out-of-School, Yrs.	.077	(.339)	.011	(1.54)
Job Tenure, Mos.	.041*	(2.00)	.003*	(5.28)
Household Behavior				
Married	2.07*	(2.22)	1.42*	(5.02)
Children	-2.81*	(-2.92)	.030	(1.03)
Health-Impaired	3.95*	(2.30)	-.083	(-1.58)
Constant	4.12		5.93	
R^2	.137		.127	
n	1,612		1,551	

*p <.05

and 6.15) was measured by number of weeks employed in the past year, dating from the 1982 interview point, and number of weeks unemployed. Job status (Tables 6.15 and 6.16) was measured by the Duncan socioeconomic index of the current or last job held, as reported in 1982, and the logged hourly wage rate of that job. The Duncan index measures the future earnings value of the youth's occupation, since the primary determinant of an occupation's Duncan score is the average adult earnings in that occupation. The logged wage rate is of course a measure of the current earnings value of the occupation. Although both present and future earnings value should be more important incentives than present employment duration, the assumption here is that for these youth the ability of completed schooling to increase immediately their earning power is the most important consideration.

The tables reveal an ordered but complex pattern. First, high school completion significantly increased employment duration for both sexes. The effect was larger for females, however, particularly in weeks employed. For them the average increase from completion was 7 weeks, compared to 3 weeks for males. In addition, weeks of unemployment were reduced about two weeks by completion, the reduction being slightly greater for females. Second, high school completion significantly increased the wage rate only of males, the rate of increase being 11 percent. And third, high school completion produced a significant gain on the Duncan index only for females, approximately one-third of a standard deviation. These results thus reveal that the equivalent earnings gain from high school completion comes about in quite different ways. For female youth high school completion facilitates much more regular employment, but in jobs which do not pay better now although they will do so

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of several sensitivity analyses, which show the wage returns estimates to be relatively stable across different universe restrictions (Appendix Table 6A.2).

in the future. For male youth high school completion facilitates slightly more regular employment, and in jobs which do pay better now even though they will not continue to do so in the future.[6]

These different patterns of outcomes for males and females seem to reflect the prevailing differences in labor market opportunities for males and females more than they indicate any differential efficacy of school completion. What this last analysis thus explains is the paradox of how high school completion could in fact produce equivalent earnings returns for males and females in spite of known differences in labor market opportunities. Furthermore, when one additionally considers the decreasing attractiveness of full-time household activity for females, particularly for undereducated females in poor households, the prospect of greater labor force participation may in fact be a more crucial incentive than wage rate for their high school completion. The conclusion of this analysis thus supports the high returns hypothesis, as modified by the sex difference in labor market opportunity.

Tables 6.17 and 6.18 present the variable returns analysis for the disaggregated sample, conducted in order to see whether those ethnic groups with higher dropout prevalence have systematically lower labor market returns to high school completion. In general there is negative support for this hypothesis, but the evidence is at times puzzling. For males the significant wage rate increase from high school completion holds fairly uniformly for all groups, varying from an 11 percent increment for whites, to 12 percent for blacks and 14 percent for Hispanics (Table 6.18). The significant increase in male earnings also occurs for all three groups, although for Hispanics the increment is double that in the other two groups. The fact that higher

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[6] A replication of this analysis for the 1981 labor market activity of these youth produced the same pattern of findings. Results are available upon request.

Table 6.17 Regression of 1981 Earnings, 1982 Weeks Employed and Wage Rate on Basic Model, for Civilian Youth 17-24 in 1982 Who Were Terminal High School Graduates or Dropouts by 1980 or Before, by Ethnicity, Females.[a]

Explanatory Variable	Earnings		Wks. Employed		Ln Wage	
	b	(t)	b	(t)	b	(t)
Blacks						
Grad.	1910*	(4.47)	12.2*	(5.70)	.109	(1.46)
AFQT	13.5	(1.04)	.059	(.91)	.004	(1.84)
Yrs.-out	57.1	(.611)	.054	(.12)	-.004	(-.24)
Mos.-ten	148*	(9.91)	.671*	(8.93)	.005*	(2.49)
R^2	.425		.415		.133	
n	419		424		236	
Hispanics						
Grad	379	(.66)	4.27	(1.49)	.048	(.58)
AFQT	58.7*	(3.84)	.150*	(1.97)	.006*	(2.39)
Yrs.-out	160	(1.75)	.299	(.65)	.004	(.22)
Mos.-ten	123*	(7.49)	.606*	(7.38)	.006*	(2.87)
R^2	.369		.356		.067	
n	278		281		176	
Whites						
Grad	1460*	(5.46)	6.41*	(5.01)	.049	(1.19)
AFQT	36.9*	(5.31)	.136*	(4.09)	.003*	(3.24)
Yrs.-out	59.1	(1.05)	.116	(.426)	.018*	(2.03)
Mos.-ten	77.7*	(11.4)	.299*	(9.10)	.005*	(4.80)
R^2	.425		.414		.152	
n	1200		1207		860	

[a] Coefficients for other variables in Basic Model (Table 6.12) not presented.

*$p < .05$

Table 6.18 Regression of 1981 Earnings, 1982 Weeks Employed and Wage Rate on Basic Model, for Civilian Youth 17-24 in 1982 Who Were Terminal High School Graduates or Dropouts by 1980 or Before, by Ethnicity, Males.[a]

Explanatory Variable	Earnings		Wks. Employed		Ln Wage	
	b	(t)	b	(t)	b	(t)
Blacks						
Grad.	1470*	(2.53)	6.74*	(3.27)	.120*	(2.16)
AFQT	31.4	(1.82)	.124*	(2.03)	.000	(.02)
Yrs.-out	387*	(2.63)	.818	(1.57)	-.001	(-.04)
Mos.-ten	67.6*	(4.13)	.200*	(3.46)	.003	(1.68)
R^2	.227		.231		.063	
n	417		430		348	
Hispanics						
Grad	3200*	(3.00)	4.59	(1.85)	.139*	(2.30)
AFQT	65.3*	(2.39)	.245*	(3.87)	.003*	(2.11)
Yrs.-out	440*	(2.06)	.427	(.87)	.030*	(2.42)
Mos.-ten	107*	(4.40)	.194*	(3.44)	.002	(1.24)
R^2	.345		.308		.189	
n	249		258		225	
Whites						
Grad	1500*	(2.87)	1.53	(1.25)	.112*	(2.85)
AFQT	102*	(9.52)	.121*	(4.22)	.003*	(2.45)
Yrs.-out	311*	(2.53)	.180	(.62)	.010	(1.08)
Mos.-ten	36.2*	(2.98)	.169*	(6.67)	.004*	(4.66)
R^2	.237		.171		.115	
n	1085		1097		978	

[a] Coefficients for other variables in Basic Model (Table 6.12) not presented.

*p < .05

dropout prevalence occurs for male Hispanics despite the higher returns to schooling for them is strong evidence against the variable returns hypothesis. Similarly, for male youth the employment duration returns to high school completion are significant only for blacks, also contrary to the prediction of this hypothesis. The pattern of returns for females (Table 6.17) further gives negative support, although in a manner different than for males. The wage rate returns are nonsignificant for all three female groups. Employment duration and earnings returns are highly significant for black as well as white females, and are nonsignificant only for Hispanic females.

These results do not support the variable returns hypothesis. High returns to schooling are not any less likely to occur in minority ethnic groups with high dropout prevalence. If anything, high returns in such groups tend to be more likely. Given the greater obstacles to high school completion among minority youth, it may be that high school completion in fact has added certification value for them. The unanticipated finding from the variable returns analysis was the differing pattern of returns for Hispanic males and females. For males Hispanics tended to draw the highest returns from schooling, whereas for females Hispanics had the lowest returns. If one assumes the household-labor market division of labor follows traditional wife-husband roles more among Hispanics than the other two groups, these findings suggest the young female Hispanic may use any additional human capital she acquires from high school completion to help her husband increase his earnings rather than her own. Adopting a family unit rather than individual worker perspective, the schooling returns for Hispanics then become similar to those for the other two groups.

VI. SOME DROPOUT POLICY OPTIONS

With the exceptions noted, these last findings confirm that dropout youth currently start off substantially worse in the labor market than those who complete high school. While there are important human capital and household activity differences between dropouts and completers, it is the certification value of completion itself that is of paramount importance for explaining their labor market advantage. Furthermore, regardless of whether it represents arbitrary credentialism or valid signaling to employers of one's future productivity, such certification benefits black and Hispanic minority youth at least as much as white youth.

These findings suggest three broad alternative policy responses, each of which has its own internal logic. The most general is the laissez faire approach. From this perspective the American high school dropout is but one manifestation of a basic structural characteristic of all advanced industrial societies. Those young persons with the least educational certification, society's "undereducated," tend to come from the lowest socioeconomic origins and to make the least successful entry into the labor market. The essence of tha American high school dropout stigma is the message that one is undersocialized for full participation in adult society, particularly in the economic sector. In other industrial societies the stigma of undereducation tends to be associated with much lower levels of formal education. The laissez faire position questions the wisdom or feasibility of efforts to alter this basic structural phenomenon. Efforts should instead be focused on diminishing the stigma (i.e., changing the belief that the dropout is undersocialized) and ameliorating the most negative economic and social consequences of the dropout label. The major difficulty with this approach of course is that it effectively ignores the equity concerns of the ethnic minorities who find themselves disproportionately represented among the undereducated.

The second and more specific policy option is to provide dropout-risk youth greater incentives to complete high school. This recommendation would of course apply more to the approximately 50 percent of dropout youth who are early leavers than to the nonfinisher dropouts. One of the most effective incentives may be the information that high school completion has real labor market value. Particularly among the urban poor, youth who consider college attendance unlikely may see little future benefit from a high school diploma. In fact, for some youth the perceived diminished value of the high school diploma has given the high school dropout label a form of street-culture respectability. In the context of the first, laissez faire approach such youthful beliefs are appropriate, since they diminish the negative psychological consequences of the dropout stigma. From the perspective of rational decision-making, however, youth and society will both benefit from knowing the real economic value of high school completion.

The third policy option is to increase the opportunities for delayed completion of high school. Realistically the most ambitious dropout information program can be expected to have only limited success in reducing dropout prevalence. Dropout decisions only infrequently are conscious products of individual rational choice, particularly for the approximately fifty percent of youth who are in the nonfinisher category. Many dropout youth do already value high school completion, but because of social circumstances are unable to achieve it. Such dropout-risk youth would benefit from being given increased opportunities to complete high school. Two such opportunities are the provision for extended years of schooling followed by the delayed receipt of a regular diploma or the somewhat quicker method of independent or group study leading to alternative GED certification.

Before advocating such options, however, it is of some importance to determine if they currently have the same credential value in the labor market as normal high school completion, i.e., receipt of the diploma by age 18. Accordingly, two revised wage equations were estimated, replacing the high school completion variable first with separate variables for diploma and GED completion, and second with separate variables for completion by age eighteen and at age nineteen or later. For both males and females GED certification brought only half the wage returns of a regular diploma. For males the GED rate of return was nonsignificant at 5.2 percent (t=.94), compared with 12.1 percent return (t=4.03) for a regular diploma. For females the GED returns were still lower, 3.4 percent (t=.64) compared with 6.1 percent (t=1.78) from a regular diploma. Clearly the diploma still has greater certification value to employers. This suggests the possibility either of improving the academic value (both real and perceived) of the GED, or else replacing the GED examination preparation with more standard coursework that leads to a delayed diploma.

Delayed completion in itself appears not to be as uniformly detrimental in the labor market as a GED. For males delayed completion actually raised the wage rate of return, to 15.9 percent (t=3.17) for those who finished at age 19 or later, compared with 10.9 percent (t=3.54) for those finished by age 18. By contrast, female delayed completers did poorly, with a near-zero rate of return of -1.0 percent (t=-.13), compared with a 7.1 percent rate (t=2.08) for the on-time completers. Given all the other human capital and household activity variables controlled for in the wage equation, the most plausible reason why delayed completion hurts female youth but not male is employer sex discrimination. The greater prevalence of delayed completers among male youth (11.8 percent of all male graduates compared with only 4.1 percent of female graduates) raises the further possibility employers see such delay as more normal for males. Nevertheless, assuming this sex difference can be diminished, these results suggest that programs of extended regular schooling resulting in a delayed diploma do bring higher returns than the GED examination route.

For the 4.8 million youth in the cohort who were already dropouts by 1982--fourteen percent of all youth then aged 17-24--this third option appears to offer the most lasting benefit. Extended schooling is particularly beneficial for minority dropouts, who tend to be disproportionately represented in the nonfinisher category. In the context of a social structural understanding of the high school dropout problem, high school completion programs for dropout-risk youth need both to inform youth of the labor market advantages of extended schooling and to provide improved opportunities for delayed completion.

VII. SUMMARY AND CONCLUSIONS

One common observation on American society has grounded all the analyses presented in this chapter--in our overeducated society not to complete high school carries a social stigma, as signified in the label "dropout." Among other negative consequences, this dropout label is likely to decrease the likelihood of successful labor market entry; conversely, high school completion has positive certification value, above and beyond its human capital value. The analyses presented here tend to support this observation and suggest some possible avenues for ameliorating this condition.

Dropouts remain most prevalent among the ethnic minorities. In 1982 fully 32 percent of Hispanic youth and 19 percent of black youth were dropouts, compared with 13 percent of white youth. Among white youth, regional variation in dropout prevalence was substantial, reaching a high of 21 percent in the East South Central states. Sex differences in dropout prevalence were relatively slight, but the overall rate for males is 2 percentage points higher than that of females.

Insights into the dropout process come from examining three types of droputs, classified according to age of leaving school and permanence of their condition. First are the early leavers, consisting of all youth who leave school before the normal graduation age of 18. Only half the dropout youth leave school early. The other half consist of 28 percent who leave at age 18 and 20 percent who leave at age 19 or later, the nonfinishers, youth who leave high school at or after the normal departure age but have not finished. There is an 80 percent probability that early leaver and nonfinisher youth will still be dropouts after four years. All youth who ever dropped out and who by age 22 have not completed high school are likely to remain dropouts permanently; they are thus designated the undereducated because they lack the minimum educational certification sought by most employers.

Examination of age-specific dropout prevalence rates showed the relative mix of early leavers, nonfinishers, and undereducated youth in the whole cohort and within ethnic, sex, and regional groups. Of interest are the high proportions of nonfinishers among black youth and of early leavers among southern white youth. The sex difference in dropout prevalence is due primarily to males' higher nonfinisher rate. Dropout prevalence at age 22 reveals an ethnic divergence even larger than the overall differences. Apparently minority youth either had fewer delayed completion opportunities or took less advantage of those opportunities.

When youth are asked their reasons for dropping out, females most frequently cite family responsibility or pregnancy, then dissatisfaction with school, and third, work-related reasons. Males cite school dissatisfaction and work-related reasons, in that order, with only a small percentage citing family responsibility. More striking are the differences in social origins between dropouts and youth who achieve higher levels of educational attainment. Fathers of dropout youth average only nine years of education, compared with 11 years for fathers of terminal high school graduates and 14 years for fathers of college graduates.

Estimation of 1982 wage and labor supply equations for all youth who in 1980 were either dropouts or terminal high school gradautes showed the strong advantage of high school completion for all youth, regardless of sex or ethnic background. Completion via the GED, achieved by 6.1 percent of all high school graduates, brings only half the wage rate of return of a regular diploma. By contrast, delayed completion in itself showed no disadvantage over on-time completion for males, although it did for females. More emphasis might well be given to regular high school, delayed-completion opportunities--especially for the nonfinisher category of dropouts--and a corollary deemphasis on GED certification for youth.

One final note of caution is in order. In assessing the relationship between high school completion and measures of early labor market experience, nineteen additional explanatory variables are included in the equations. These variables measure the other major factors related to labor market success--quality of schooling, participation in nonschool training experiences, employment experience, labor market location, socioeconomic background, and current household activity. Not surprisingly, in the estimation equations one or more variables in each of the six areas did significantly relate to measured labor market outcomes, suggesting the possibility of policy interpretations for all these relationships, not just for high school completion. In the logic of the present analysis, however, these variables were included mainly as statistical controls, permitting an assessment of the value of high school completion net of other key determinants on which dropouts are likely to be different from completers.

They thus improved the precision of the educational returns estimate. In particular, the inclusion of AFQT scores made plausible the interpretive distinction drawn between the certification value of completion versus its human capital development value.

Nevertheless, if one grants that each of the measured areas does represent an important alternative policy arena for facilitating the labor market entry of educationally disadvantaged youth, limited interpretations may be made. They must be read, however, only as summaries of empirical regularities: the full meaning of the estimated coefficients for these variables must await the use of more refined measures and more adequate model specifications.

One intriguing finding, for example, is the apparent negative effect (Table 6.12) on males' earnings of prior military experience. The effect apparently operates via reducing labor force participation rather than wage rates (Tables 6.14, 6.16). But it is unclear whether this relationship holds across all branches of the service, and for completers as well as attriters and whether recent veterans make use of alternative sources of income instead of immediately joining the labor force. These and other questions must be answered before any policy interpretations can be drawn from Tables 6.12, 6.14, and 6.16. Similarly, for male youth the positive wage and employment duration returns to marriage permit no direct policy interpretations pending further analysis: this relationship could reflect normal life-cycle transition to joing family and work roles, or it could represent preferential treatment by employers. An analysis fully incorporating the longitudinal aspects of the data is necessary to answer this question.

These alternative policy areas do suggest a rough summary assessment of their total net impact on the labor market successes of undereducated youth. In other words, if one wanted to reduce the disparity in labor market success between dropouts and completers, how much could be accomplished by factors other than high school completion? As shown in Table 6A.2, a simple regression of wage rate on high school completion alone indicates that for both male and female youth, high school completers on average earn 18 percent higher wage returns than do dropouts. With the additional nineteen variables entered in the wage equation, the net return from high school completion drops to 11 percent for males and 6 percent for females. The gains from high school completion can account for a substantial part of this overall wage difference between completers and droputs, but not all of it by any means.

APPENDIX

Presented here are three additional pieces of information in support of specific features of the data analysis.

1. Throughout this report the descriptive tables have reported the estimated population values for the various youth enrollment and dropout measures instead of actual sample sizes. The latter are given only when necessary to compute degrees of freedom for statistical tests. Before following this procedure, it was determined that the reported population estimates did in fact match comparable Census figures produced from its 1981 annual special October survey. Young (1982) reported 3.05 million civilian noninstitutional youth in the 16-24 age category graduated from high school in 1981. The comparable 1981 NLS figure is a 3.4 million increment over 1980 of civilian and military youth who finished their high school education with a diploma or GED (Table 1). At that time the cohort age range was 16-23. Subtracting out the GED completers and the military population graduates would bring the NLS total very close to the Census figure. Similarly, the 714,000 new dropouts among the civilian youth 16-24 in 1981 which Young reported compares closely with the 810,000 new dropouts estimated from the 1981 NLS civilian and military youth survey (Table 3). However, if one subtracts the 120,000 prior dropouts who reenrolled that year, and the 260,000 more who completed their high school education that year, one gets a NLS-estimated net dropout increment in 1981 of only 450,000.

2. Table 6A.1 gives the year-by-year dropout prevalence figures used in the construction of the age-specific rates for Figure 6.1.

3. Table 6A.2 reports a sensitivity analysis designed to assess the stability of the estimated wage rate of returns to high school completion under different universe restrictions and model specifications. The general result

Table 6A.1 Educational Attainments from 1979 to 1982 of the Youth Cohort, by Age.

		(Age in 1979)									
1979 Educational Attainment		14	15	16	17	18	19	20	21	22	Total
	E	99.4%	97.9%	92.8%	86.0%	34.2%	4.2%	1.2%	.1%	0%	48.4%
	D	0.6	2.1	6.9	10.5	17.3	17.3	13.6	15.1	13.5	10.9
	G	0	0	.3	2.6	21.2	36.8	36.8	38.6	35.3	18.3
	C	0	0	0	0.9	27.3	41.7	48.5	46.2	51.3	22.4
		100	100	100	100	100	100	100	100	100	100
		(Age in 1980)									
1980 Educational Attainment		15	16	17	18	19	20	21	22	23	Total
	E	98.5	93.2	84.1	37.3	4.8	0.7	0.5	0	0	36.8
	D	1.5	6.6	12.3	13.7	17.6	16.2	12.5	13.7	12.9	12.1
	G	0	0.1	2.2	21.8	33.4	35.3	34.3	36.5	33.0	21.5
	C	0	0.1	1.4	27.1	44.2	47.7	52.6	49.8	54.1	29.6
		100	100	100	100	100	100	100	100	100	100
		(Age in 1981)									
1981 Educational Attainment		16	17	18	19	20	21	22	23	24	Total
	E	93.5	84.0	33.2	3.3	1.2	0.1	0.3	0.2	0	24.0
	D	6.4	12.5	16.6	15.4	16.7	15.5	11.5	13.1	13.2	13.7
	G	0	1.6	20.9	32.5	31.8	32.3	31.8	34.4	31.4	24.2
	C	0	1.9	29.3	48.7	50.4	52.0	56.5	52.3	55.4	38.2
		100	100	100	100	100	100	100	100	100	100
		(Age in 1982)									
1982 Educational Attainment		17	18	19	20	21	22	23	24	25	Total
	E	84.1	38.3	4.1	0.7	0.3	0.1	0.2	0.7	0	13.2
	D	11.5	15.7	17.1	14.9	15.4	14.4	11.5	12.8	13.2	14.2
	G	2.6	18.1	33.7	30.7	30.8	31.1	30.2	32.3	30.1	27.1
	C	1.8	27.9	45.1	53.8	53.5	54.3	58.1	54.2	56.6	45.5
		100	100	100	100	100	100	100	100	100	100

Legend: E = high school enrollee; D = high school dropout; G = terminal high school graduate; C = high school with some college

Table 6A.2 Alternative Estimates of Rates of Return (Ln Wage) to High School Completion Under Different Universe Restrictions and Model Specifications, by Sex

Universe and Specification Description	Females		Males	
	b	(t)	b	(t)
I. More restrictive universe specification unchanged: youth who were high school terminal graduates or dropouts by 1980, who had no col-plans in 1979; basic model (Table 12) specification	.051	(1.32)	.102*	(2.92)
R^2	.142		.134	
n	856		1,093	
II. Less restrictive universe, specification revised: all youth not enrolled in school by 1980, including college youth; basic model specification plus two dummy variables for educational statuses of some college and college graduate	.060	(1.81)	.116*	(4.03)
R^2	.132		.143	
n	1,822		1,973	
III. Same universe four specifications:				
A. No other variables in equation	.176*	(5.91)	.182*	(7.31)
R^2	.026		.033	
B. Net of AFQT only	.119*	(3.73)	.109*	(3.89)
R^2	.041		.051	
C. Net of years out-of-school only	.180*	(6.05)	.199*	(7.98)
R^2	.029		.046	
D. Net of years out-of-school and months job tenure only	.130*	(4.31)	.167*	(6.61)
R^2	.060		.067	
E. Net of AFQT, years out-of school, and months job tenure	.078*	(2.41)	.105*	(3.72)
R^2	.074		.083	
F. Net of all variables in basic model (same as estimate in Table 12)	.057*	(1.71)	.113*	(3.84)
R^2	.140		.127	
n	1,272		1,551	

[a] Coefficients for status of some college are .119 (females) and .178 (males); for college graduate are .044 (females) and .788 (males).

$^*p < .05$

was that varying the universe restrictions did not alter the estimate, whereas reducing the control variables included in the equation substantially increased the estimated rate of return. The conclusion drawn was that the 20 variable reduced-form equation used in the text provides an adequate if somewhat conservative estimate of this rate of return.

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The Center has also been active in manpower planning both in the U.S. and in the developing countries. A project for the Ohio Advisory Council for Vocational Education identified the highly fragmented institutions and agencies which supply vocational and technical training in Ohio. Subsequent projects for the Ohio Occupational Information Coordinating Committee have followed graduates of these programs. These data and information on occupational distributions of employers collected for the Occupational Employment Statistics Program are being integrated into a comprehensive planning model which will be accessible to trainees and employers and linked to a national network.

Another focus of the Center's research is industrial relations and collective bargaining. In a project for the U.S. Department of Labor, staff members are working with unions and management in a variety of industries to evaluate several current experiments for expedited grievance procedures. The procedural adequacies, safeguards for due process, and cost and timing of the new procedure are being weighed against traditional arbitration techniques.

Senior staff also serve as consultants to many boards and commissions at the national and state level. Recently the Center's staff have produced papers and prepared testimony for the Department of Labor, the Vice President's Task Force on Youth Unemployment, the Joint Economic Committee of Congress, the National Commission for Employment and Unemployment Statistics, the National Commission for Employment Policy, the White House Conference on the Family, the Ohio Department of Corrections, the Ohio Board of Regents, the Ohio Governor's Task Force on Health, and the Ohio Governor's Task Force on Welfare.

The Center maintains a working library of approximately 10,000 titles, including a wide range of reference works and current periodicals, as well as an extensive microfilm and microfiche collection. Through their facilities linked to the University computer, the Center's data processing staff provide statistical, technical, and programming support both for in-house researchers and the over 250 users of the National Longitudinal Surveys data tapes. They maintain the NLS tapes, data base, documentation, and associated software.

For information on specific Center activities, write: Director, Center for Human Resource Research, 5701 North High Street, Worthington, Ohio 43085.

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The Center for Human Resource Research
5701 North High Street
Worthington, Ohio 43085

Center for Human Resource Research

The Center for Human Resource Research is a policy-oriented multidisciplinary research organization affiliated with The Ohio State University. Established in 1965, the Center is concerned with a wide range of contemporary problems related to developing and conserving human resources. Its more than thirty senior staff members come from disciplines including economics, education, English, health sciences, industrial relations, management science, psychology, public administration, social work, and sociology. This multidisciplinary team is supported by approximately 70 graduate research associates, full-time research assistants, computer programmers, and other personnel.

The Center has become preeminent in the fields of labor market research and manpower planning. With continuing support from the United States Department of Labor, the Center has been responsible since 1965 for the National Longitudinal Surveys of Labor Market Experience. Staff have assisted in population and human resource planning throughout the world, having conducted major studies in Bolivia, Ecuador, Kenya, Sierra Leone, Venezuela, and Zaire. At the request of the National Science Foundation, a review of the state of the art in human resource planning was conducted. Other studies have assessed the impact of labor and education policy on labor supply and evaluated employment statistics collection methods. Senior personnel are also engaged in several other areas of research—collective bargaining and labor relations, evaluation and monitoring of the operation of government employment and training programs, and the projection of health education and facility needs.

The Center for Human Resource Research has received over two million dollars annually from government agencies and private foundations to support its research in recent years. Providing support have been the U.S. Departments of Labor, State, Defense, Education, Health and Human Services; Ohio's Health and Education Departments and Bureau of Employment Services; the Ohio cities of Columbus and Springfield; the Ohio AFL-CIO; the George Gund Foundation; the Rockefeller Foundation; and the Ford Foundation. The breadth of the Center's research interests is best illustrated by a brief review of a few of its current projects.

The Center's largest project is the National Longitudinal Surveys of Labor Market Experience. This project has involved repeated interviews over a fifteen-year period with four groups of the United States population: older men, middle-aged women, and young men and women. The data are collected for 20,000 individuals by the U.S. Bureau of the Census, and the center is responsible for data analysis. Since 1979, the NLS has followed an additional cohort of 13,000 young men and women between the ages of 14 and 21. This cohort includes for the first time those serving in the armed forces at the time of the initial interview. In addition to being the definitive U.S. national data set on the labor market activities of young adults, this continuing survey includes unique batteries of questions on such socially important issues as delinquency, alcohol and drug use, fertility, and prenatal care. For this cohort, field work is handled by the National Opinion Research Center. To date the Center's staff have prepared dozens of research monographs, special reports, and books on the NLS, and they also prepare and distribute data tapes for public use.

The Quality of Work Life Project, another ongoing study, began in 1975 as an attempt to improve the productivity and the meaningfulness of work for public employees in the cities of Springfield and Columbus. Center staff also served as third party advisers and researchers exploring new techniques for attainment of management-worker cooperation and worker health in a number of central Ohio private sector industries.

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Center for Human Resource Research

The Ohio State University

Pathways to the Future, Vol. V
A Report on the National Longitudinal Surveys of Youth Labor Market Experience in 1983

by
Paula Baker
Joan E. Crowley
Ronald D'Amico
Evangelos Falaris
William Morgan
Elizabeth Peters
Richard Willke

Center for Human Resource Research

The Ohio State University

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Executive Summary

The five chapters in this volume, the fifth in the "Pathways to the Future" series, analyze data collected from The National Longitudinal Surveys of Youth (NLS) in interviews conducted in 1979, 1980, 1981, 1982, and 1983. In 1979 12,686 young people were interviewed; in 1980, 12,141; in 1981, 12,195; in 1982, 12,123; and in 1983, 12,221. These data comprise the richest available current source of information on young people in the U.S. labor market.

Chapter One describes the use of government employment and training programs and services by the 33 million U.S. youths represented by the NLS youth cohort during the period 1978-1982 and evaluates the effects of these services on labor market outcomes. Overall, 14.5 percent of this youth population was involved in such programs, including CETA, SPEDY, WIN, and others. Participation was slightly heavier among males than females, and three times as heavy among blacks and twice as heavy among Hispanics as among whites. Participation rates for eligibles are higher among males, blacks, Hispanics, and those age 16-18. Approximately 47 percent of all participation spells were during the summer; subsidized employment, on-the-job training, and job counseling were used by more than half of all participants.

In the subset of individuals whose participation or eligibility occurred after they had left school, incomes, wages, and weeks employed in the year before participation were significantly lower for participants than for non-participants, while post-participation differences were much less significant. For whatever reason, there was a significantly greater rise in income, etc., between pre-participation and post-participation periods for participants than for non-participant eligibles. However, males who received only subsidized employment or job counseling did not experience as great an improvement as those who received other services. Furthermore, this study suggests that most of the observed improvement in trainees may have been the result of changes in "luck" which would have occurred even in the absence of participation. That is, those who decide to participate are likely to be those who are experiencing current bad luck, where current luck is a combination of the persistence of previous luck and a new random draw each period, and unrelated to ability. Since pre-participation earnings are below normal for trainees due to bad luck, the observed improvement is likely to be above that of non-trainees, who were likely to have been experiencing average or good luck. Although measurement of these luck factors is far from perfect, this study suggests that they are the most important element in any observed improvement.

Chapter Two examines the labor market experiences of a sample of terminal high school graduates in the several years subsequent to their leaving school. The school to work transition is remarkably smooth on average; most youth experience very little unemployment in the 52 weeks after leaving school and within months of graduation have found a job which they hold for at least nine weeks. Substantial unemployment and rapid job hopping characterize the experience of only a minority of these youth.

There is much more variability in the wage levels and kinds of jobs these youth hold. Moreover, this variability was only weakly related to ascribed or achieved attributes of the respondents, differences in school quality or schooling experiences including curriculum, and differences in local labor market characteristics. Despite this, early labor market advantages were shown to persist at least several years beyond first job entrance.

Chapter Three investigates the impact of recent cyclical fluctuations in the U.S. economy on youths' college enrollment behavior. The resulting strain on family economic resources and rising college costs were jointly expected to reduce college-going propensities of youth, more than offsetting any positive effect on college attendance resulting from the reduced availability of the employment alternative. The time period observed encompassed the steady economic contraction that began in 1979 and peaked in late 1982, which in turn followed the recovery period that had begun in mid-1975 and peaked in 1979.

Initial negative evidence for the hypothesis was the absence of significant annual variation among 1976 through 1982 high school graduates in the total proportion attending college, including two- and four-year institutions. This absence of annual variation held regardless of the sex or ethnic minority status of the youth. There was, however, an increase after 1979 in fourth-year college attrition, coupled with an improved rate of academic progress for those who persisted in college. Furthermore, the proportion of the total first-year enrollment that was part-time in two-year colleges doubled from 1979 to 1982, and the proportion choosing the more expensive, out-of-state four-year college option dropped commensurately.

Simultaneous with these cost-cutting trends were shifts in the preferred fields of college study, suggestive primarily of forward-looking responsive supply behavior. Men increasingly chose engineering and computer science as their major field of study, and women showed a shift out of the arts and science fields into the professional training areas of business, health, and education. Trends in financial aid over the same period showed an increase in the proportion of college youth taking student loans, but little variation in the proportion receiving educational grants. The average grant size, 1,324 dollars, failed to keep pace with the steady rise in college costs.

Equations for college attendance, financial aid receipt, and institutional enrollment quality of 1980-1982 high school graduates confirmed these trend observations. A rise in area unemployment significantly reduced college attendance and enrollment quality and increased the use of student loans. This increased use of loans and decreased enrollment quality made it possible for overall college attendance levels to remain relatively constant during the economic contraction. This negative effect of the business cycle was comparable in size to other factors commonly used to gauge equality of access to higher education. A three point rise in area unemployment reduced subsequent college attendance among high school seniors approximately the same amount as ethnic minority status or being from a rural area.

Chapter Four uses detailed fertility data to look at patterns of early childbearing and welfare use. The data clearly show that welfare dependency is concentrated among those young women who have become mothers. This pattern is expected for AFDC, where the presence of children is necessary for eligibility, but it also holds when all forms of welfare are considered. The extent of welfare dependency is quite high, especially among those who had their first birth before age 19.

The patterns of welfare receipt show that, while variables associated with social class and adult status--age, race, coming from an intact home, marital status, and education--are related to welfare dependency, the relationships are generally weaker than expected. Also, these factors are generally unrelated to the duration of dependency within the welfare population. Most women who do receive welfare are not on the rolls very long, although there is evidence that some women have repeated spells of dependency.

The large degree of overlap on critical dimensions between welfare and non-welfare mothers points to the need for a greater understanding of the specific circumstances and combinations of circumstances which lead young women to become dependent on various government transfer programs, as well as the processes which lead women to be able to leave programs. In particular, the fact that a large proportion of welfare mothers are employed following the birth of their first child suggests that the keys to reducing welfare dependency will be found in the solution to the larger problem of how to increase the earning power of young women.

Chapter Five examines the effect of demographic factors on schooling choices and on entry wages of individuals. Most previous studies focus only on the effect of the demographic cycle on wages and assume that school decisions are exogenous, but here schooling attainment and age at school completion are treated as choice variables.

Both men and women change their schooling attainment and their age at school completion in response to the demographic cycle. People on the upswing of the demographic cycle complete more schooling and leave school later relative to a flat cohort profile. Those on the downswing of the demographic cycle complete less schooling and leave school earlier relative to a flat cohort profile. The changes in schooling attainment tend to moderate the adverse effects of the demographic cycle on entry wages. This evidence is consistent with a model of forward-looking behavior in which individuals make predictions about future labor market conditions using all current information on demographic factors.

Chapter 1

An Evaluation of Outcomes for Post-School Participants in Government Employment and Training Programs with Attention to Selectivity Bias

Richard J. Willke

INTRODUCTION

This chapter describes the use of government employment and training programs and services by the 33 million U.S. youths represented by the NLS Youth Cohort during the period 1978-1982 and it evaluates the effects of these services on labor market outcomes. The detailed income and work histories in the NLS and its oversampling of low-income youths make it possible to examine the effects of such programs on the participation, use of program services, labor supply and wage rates of their target groups. Our evaluation of changes in employment and wages incorporates a statistical technique that controls for some unobserved differences between trainees and non-trainees which may affect these observed labor market outcomes.

The first section presents a brief overview of government employment and training and some results of other studies. Following that is a breakdown of participation and use of program services by sex and minority group status, and an examination of trends apparent therein. The third section examines outcomes from a purely descriptive point of view and the fourth section discusses problems in estimating the effects of training and in interpreting simple regression results. The fifth section outlines an estimation strategy designed to reduce biases imposed by unobservable factors influencing both the decision to enter a training program and subsequent outcomes, and thus measure more accurately the true effect of training. It then presents estimation results on the decision to train and the decision to work, results which are both preliminary to the final outcome study and of interest on their own merit. Finally, this section presents the final evaluation estimation results, and the sixth section draws some conclusions. Two appendices detail the data development and the econometric design of the estimation technique.

OVERVIEW AND LITERATURE REVIEW

The principal government employment and training programs operative during the period of this study were funded by CETA, the Comprehensive Employment and Training Act. These included a wide range of programs, administered by local governments and often contracted out to private nonprofit organizations, which provided anything from various levels of skill training and education to public-service employment to health and child care. This spectrum of services was designed to allow for efficient utilization of local resources and attention to local and individual needs. This variation in type and quality of services available may induce similar variation in the characteristics and objectives of trainees, however, thus making it difficult to identify and evaluate the appropriate outcome. An increase in the employment and income of participants, probably the most common and appropriate goal, will be examined here.

CETA programs, especially since 1978, have been targeted at the economically disadvantaged, with youths being a primary concern. One program specifically designed for youth was SPEDY (Summer Program for Economically Disadvantaged Youth). To the extent these programs were strictly summer employment programs with little or no training component, they will be deemphasized in this evaluation. Primary attention is given to those programs for youths who had already left school because our assumed goal of improvement in labor market outcomes is most likely to be appropriate for this group.

Some previous work on outcomes of CETA training has been done by Bassi

(1983) and Crowley (1984). Bassi uses data for trainees over age 22 from the Continuous Longitudinal Manpower Survey (CLMS) who participated during the fiscal year 1976, and a comparison group created by drawing "match lists" from the Current Population Survey (CPS) of people similar to CETA trainees based on a set of sociodemographic and past earnings variables. Her results on this adult group (which excludes white men for lack of a good comparison group) shows that earnings growth over a three-to-five year period (ranging from one to two years before and after training) is generally significantly greater for women trainees, but not for minority men. A typical estimate is that of earnings growth being $778 greater (in nominal terms) for white women trainees over the 1973-1977 interval than for their non-trainee counterparts; estimates are higher for economically disadvantaged minority women and non-economically disadvantaged white women, and higher when a 1978 post-training year or a 1974 (rather than 1973) comparison year is used. She also finds that earnings growth is generally greater when program services included on-the-job training or public-service employment. While she concludes that some CETA programs were probably cost-effective, her results are not strictly comparable to those presented below for two reasons: (1) her trainee group is generally older than the NLS group used here, and (2) her controls for non-random selection into participation are much less explicit than those used here.

Crowley uses CETA trainees and eligibles present in the NLS as the full sample, as is done here. She estimates the effects of various program services for participants in 1978-80 on outcomes such as earnings, wages, school attainment and welfare dependency in calendar year 1981. The fact that Crowley finds few significant positive results of CETA training may be largely due to the presence of uncontrolled fixed effects, which will be dealt with below.

PARTICIPATION AND USE OF SERVICES

Using the population weights for the participants in the NLS, Tables 1 through 5 detail the involvement in government-subsidized employment and training programs by the 33 million U.S. youths aged 14-22 in 1978, for the five year period 1978-1982.

Table 1.1 displays participation rates in programs for various subgroups of this cohort during these 5 years. Overall, 14.5 percent of this youth population was involved in a government employment or training program at one time or another. Participation was slightly heavier among males than females, and three times as heavy among blacks and twice as heavy among Hispanics as among whites. Programs identified as CETA programs employed 6.4 percent of this population, WIN only 0.5 percent, SPEDY 2.8 percent and other programs, or programs unidentified by respondents, 8.2 percent. Some 4.7 percent of the population, or 32.4 percent of all participants, had more than one spell in a program. Finally, 54 percent of all participants were male, 56.5 percent were white, 10.1 percent were Hispanic and 33.4 percent were black.

Yearly eligibility determinations for this population were made for the years 1978-81. Because eligibility requirements for various programs overlap to a large degree, these eligibility determinations do not differentiate among eligibility for CETA, WIN, SPEDY, etc. Using these determinations, Table 1.2 sets forth participation rates by subgroup by year. Of those eligible for at least one year, 20.7 percent participated at least once. The decline in participation rates by year, from 13.0 percent in 1978 to 8.3 percent in 1981, reflects the aging of this cohort, and hence a reduction in their need and eligibility for these programs. The breakdown of participation rates by race and sex subgroups reveal the same patterns as the participation rates in Table

Table 1.1 U.S. Youth Age 14-22 in 1978 Who Participated in a Government-Sponsored Employment and Training Program during 1978-1982 - By Race and Sex

(Percentage distribution)

	Total	White	Hispanic	Black
Ever participated in a subsidized job or program				
Total	14.5	10.3	23.4	34.5
Male	15.4	11.5	23.4	34.5
Female	13.6	9.0	23.4	34.5
Ever participated in a CETA program				
Total	6.4	4.4	10.6	16.4
Male	6.8	4.9	9.7	16.4
Female	6.1	3.8	11.6	16.4
Ever participated in a WIN program				
Total	0.5	0.3	1.1	1.7
Male	0.5	0.3	0.9	1.5
Female	0.6	0.3	1.3	2.0
Ever participated in a SPEDY program				
Total	2.8	1.4	5.4	9.5
Male	3.1	1.7	6.1	9.9
Female	2.4	1.0	4.7	9.0
Ever participated in some other (or unidentified) program				
Total	8.2	6.1	12.9	18.2
Male	8.7	6.7	13.3	18.5
Female	7.7	5.5	12.5	17.9
Participated in any program more than once				
Total	4.7	2.7	8.9	14.1
Male	5.2	3.3	9.1	15.0
Female	4.2	2.2	8.6	13.2
Percent of all participants				
All	100	56.5	10.1	33.4
Male	54.0	32.2	5.1	16.7
Female	46.0	24.3	5.0	16.6

Table 1.2 Percent of U.S. Youth Age 14-22 in 1978 Eligible for Government-Sponsored Employment and Training Programs Who Participated in Such Programs during 1978-1982, by Sex, Race and Year

	Total	White	Hispanic	Black
1978				
Total	13.0	9.1	15.4	19.6
Males	13.9	9.3	15.8	22.6
Females	12.1	9.0	15.1	16.9
1979				
Total	11.8	8.2	15.0	18.7
Males	11.9	8.0	15.6	19.5
Females	11.8	8.4	14.4	18.0
1980				
Total	10.5	7.4	12.3	17.3
Males	10.9	7.6	12.7	18.3
Females	10.1	7.1	12.0	16.3
1981				
Total	8.3	6.1	9.8	13.2
Males	9.8	7.8	10.7	14.5
Females	7.0	4.6	9.0	12.1
Total				
Total	20.7	14.6	27.7	37.4
Males	22.1	16.6	27.6	38.1
Females	19.2	12.6	27.7	36.7

1.1, adjusted for the fact that blacks have the highest eligibility rates, followed by Hispanics, with the white eligibility rate being the lowest.

Table 1.3 presents age-specific participation rates which are, not surprisingly, highest in the late teen years. They also fall after 1980, most likely reflecting the cuts in these programs made by the Reagan administration.

The use of specific program services by participants is presented in Tables 1.4 and 1.5. Table 1.4 shows the percentage of those participants who used particular services. Subsidized employment means that the "training" activity was a job in which the trainee's wages were partially or fully subsidized by the government. A wide majority of participants, 88.9 percent of the total, held at least one such job. Among specific services, on-the-job training was received by over two-thirds of all participants and job counseling by 56 percent. Skill training (37 percent) and basic education (27 percent) are next highest, and GED, college preparatory, health care and transportation services usage rates are all about 20 percent. Child care, college preparation and skill training were used somewhat more heavily by females, while health care and transportation utilization rates were higher among males. Hispanics tended to have higher utilization rates than the other two groups, although blacks were higher in the transportation, child care and college categories. Almost across the board, whites had the lowest utilization rates. This is partially explained by the fact that whites were least likely to participate more than once, and hence less likely to use different services due to multiple spells. Spell-specific rates (not shown here) reduce but do not eliminate these differences. Finally, 37.1 percent of all participants were enrolled only during the summer months.

Table 1.5 details utilization rates by type of program and summer-non-

Table 1.3 Percent of All U.S. Youth and Percent of Eligible Youth Age 16-26 during 1978-1982 Who Participated in Government Sponsored Employment and Training Programs, by Age and Year
(Percentage distribution)

Age	Total	1978	1979	1980	1981	1982
16 - All	6.9	7.3	6.7	6.9	*	*
Eligibles	15.2	17.1	15.5	13.0	*	NA
17 - All	7.5	7.8	8.0	7.7	6.3	*
Eligibles	17.4	18.2	19.7	17.5	12.8	NA
18 - All	7.3	9.0	7.6	8.6	5.7	5.4
Eligibles	14.5	16.9	14.8	15.3	11.3	NA
19 - All	6.3	6.2	7.7	6.6	6.5	4.7
Eligibles	12.2	12.7	13.3	11.2	11.7	NA
20 - All	4.6	6.0	4.7	5.8	3.1	3.8
Eligibles	8.6	8.9	7.3	11.0	6.7	NA
21 - All	4.0	3.2	5.1	4.7	4.5	2.6
Eligibles	7.6	6.0	9.2	6.0	9.1	NA
22 - All	2.9	3.0	3.5	3.8	2.7	2.0
Eligibles	6.3	8.0	5.7	7.5	5.2	NA
23 - All	2.6	*	2.5	3.4	2.8	1.8
Eligibles	5.7	*	6.2	5.7	5.6	NA
24 - All	1.9	*	*	2.5	2.4	1.3
Eligibles	4.5	*	*	2.7	4.9	NA
25 - All	1.0	*	*	*	1.8	0.8
Eligibles	6.3	*	*	*	6.4	NA
26 - All	1.3	*	*	*	*	1.3
Eligibles	NA	*	*	*	*	NA

*No data available for this group.
NA - eligibility determination not made.

Table 1.4 Use of Government Sponsored Employment and Training Program Services during 1978-1982 by Youth Age 14-22 in 1978, by Race, Sex, and Program Offering - Percent of Participants

	All	White	Hispanic	Black
Subsidized employment				
All	88.9	87.9	90.2	90.2
Male	87.6	85.6	91.6	90.0
Female	90.4	90.8	88.9	90.4
On-the-job training				
All	68.6	66.9	71.1	70.5
Male	69.2	68.7	68.9	70.1
Female	67.8	64.7	73.4	70.9
GED				
All	18.5	16.4	24.0	20.3
Male	19.9	17.5	26.5	22.4
Female	16.8	14.8	21.4	18.2
Basic education				
All	27.9	25.6	36.9	29.0
Male	28.2	27.1	35.6	28.2
Female	27.5	23.6	38.2	29.9
Skill training				
All	37.8	37.0	39.7	38.6
Male	35.7	35.6	35.6	35.9
Female	40.3	39.0	43.8	41.2
College prep.				
All	20.4	17.0	23.8	25.3
Male	18.1	14.8	22.7	23.1
Female	23.2	19.9	24.9	27.4
Health care				
All	19.7	16.9	25.0	22.7
Male	22.7	19.6	28.2	26.9
Female	16.1	13.3	21.7	18.6
Child care				
All	6.4	3.3	8.3	11.2
Male	4.3	1.8	4.9	8.8
Female	9.0	5.3	11.8	13.5
Other services				
All	8.0	8.4	8.6	6.9
Male	8.4	8.6	8.9	7.9
Female	7.4	8.2	8.4	6.0
Transportation				
All	23.7	22.1	22.3	26.9
Male	26.1	25.6	22.8	28.0
Female	20.9	17.4	21.8	25.8
Job counseling				
All	56.1	49.8	63.8	64.6
Male	56.8	52.7	58.1	64.4
Female	55.4	46.0	69.5	64.8
Summer only				
All	37.1	31.7	35.9	46.8
Male	36.5	33.2	36.5	43.4
Female	37.4	29.6	35.2	50.2

Table 1.5 Use of Particular Government Sponsored Employment and Training Program Services during 1978-1982, by Type of Program and Season of Year

(Percentage of participant spells)

	All	CETA	WIN	SPEDY	Other
Percent of all spells					
All	100.0	36.3	2.7	15.0	45.9
Summer	47.0	17.1	0.7	13.2	16.0
Non-summer	53.0	19.2	2.1	1.8	30.0
Average length of spell (weeks)					
All	17.9	18.8	18.3	10.5	19.7
Summer	10.3	10.6	13.8	8.7	11.2
Non-summer	24.7	26.1	19.8	24.0	24.2
Subsidized employment					
All	87.6	88.3	91.3	100.0	82.8
Summer only	95.6	95.2	91.7	100.0	92.6
On-the-job training					
All	62.5	63.6	69.1	61.2	61.7
Summer only	58.8	59.4	40.7	59.7	58.1
GED					
All	14.1	14.6	18.9	5.8	16.1
Summer only	8.2	8.9	28.0	5.6	8.7
Basic education					
All	21.5	21.4	24.4	8.4	25.7
Summer only	12.4	12.1	26.3	8.9	14.9
Skill training					
All	30.1	29.7	29.4	17.2	34.8
Summer only	21.2	21.7	27.8	17.7	23.4
College prep.					
All	16.1	14.5	20.8	13.5	18.0
Summer only	12.8	12.1	23.1	12.9	12.9
Health care					
All	14.9	14.1	19.8	8.7	17.3
Summer only	12.1	10.6	22.6	9.3	15.6
Child care					
All	4.8	4.7	10.6	3.6	4.9
Summer only	4.7	4.2	16.0	3.8	5.5
Other services					
All	5.8	4.6	5.6	2.1	7.9
Summer only	4.2	4.1	1.6	2.1	6.9
Transportation					
All	18.7	15.7	26.7	15.0	21.8
Summer only	17.6	15.3	18.8	14.6	22.4
Job counseling					
All	50.8	55.3	66.0	46.9	47.6
Summer only	47.1	50.1	67.3	46.1	44.0

Universe: U.S. youth age 14-22 in 1978.

summer timing for all program spells. Summer programs accounted for 47 percent of all spells, with SPEDY being predominantly summer and 100 percent subsidized employment, CETA split about equally, and WIN and other programs being more heavily non-summer. CETA programs represented 36.3 percent of all spells, WIN 2.7 percent, SPEDY 15 percent and other and unidentified programs 45.9 percent. Summer spells were much shorter, only 10.3 weeks on average, while non-summer spells averaged 24.7 weeks. Utilization of services was uniformly higher in non-summer spells, with relative usage about the same as in Table 1.4. However, Table 5 reveals that usage rates were highest in WIN and other programs, and lowest in SPEDY.

PRELIMINARY COMPARISONS

This section presents comparisons between participants and eligible non-participants for three labor market outcomes. Eligibles are assigned "training dates" in their eligibility year to correspond with age-specific enrollment rates for trainees (see Appendix 1 for details). Labor market outcomes are compiled for half-year periods, the two six-month periods prior to enrollment and the four six-month periods after leaving training. The labor market outcomes are (i) the highest wage reported during the period, (ii) number of weeks employed during the period, (iii) total wage and salary income during the period. All dollar figures are reported in 1980 dollars.

Table 1.6 presents means, sample sizes, and standard errors of means for these three outcomes for all 6 periods for participants and non-participants. For wages, only those for whom we have observable wages can be included in the table. However, for income and weeks employed, non-workers have valid zero values and can be included if desired. Therefore, these latter outcomes are shown including and not including these non-workers. For

Table 1.6 Means for Labor Market Outcomes, by Period and Participation, for NLS Youth Post-School Participants and Comparison Group Members[a]

	Participants			Non-participants			Sign. level of diff. of means test
	N	Mean	Standard error	N	Mean	Standard error	
Wage rate (1980 dollars) - workers[b]							
7-12 months prior	289	4.02	.13	1041	4.63	.07	.01
1-6 months prior	325	3.72	.09	1281	4.56	.07	.01
1-6 months after	548	4.39	.08	1842	4.49	.05	*
7-12 months after	523	4.50	.10	1975	4.55	.05	*
13-18 months after	459	4.58	.11	1993	4.70	.05	*
19-24 months after	372	4.62	.13	1696	4.83	.06	.117
Weeks employed - workers[b]							
7-12 months prior	289	16.4	.5	1045	19.8	.2	.01
1-6 months prior	325	14.7	.4	1285	19.6	.2	.01
1-6 months after	548	18.1	.3	1843	19.5	.2	.01
7-12 months after	523	19.2	.3	1975	19.4	.2	*
13-18 months after	459	20.1	.3	1993	20.4	.2	*
19-24 months after	372	19.9	.4	1697	20.3	.2	*
Earned income (1980 dollars) - workers[b]							
7-12 months prior	289	2187	111	1042	3327	100	.01
1-6 months prior	325	1747	95	1285	3486	217	.01
1-6 months after	540	2896	110	1843	3237	95	.019
7-12 months after	523	3152	117	1975	3200	54	*
13-18 months after	459	3448	125	1993	3587	60	*
19-24 months after	372	3449	148	1696	3735	69	.081
Weeks employed - all[c]							
7-12 months prior	600	8.7	.4	2499	9.2	.2	*
1-6 months prior	767	7.2	.3	2895	9.4	.2	.01
1-6 months after	980	11.0	.3	3854	10.1	.2	.02
7-12 months after	888	11.9	.4	3854	10.5	.2	.01
13-18 months after	774	12.3	.4	3709	11.5	.2	.095
19-24 months after	636	12.0	.5	3025	11.8	.2	*
Earned income (1980 dollars) - all[c]							
7-12 months prior	600	1053	70	2496	1393	53	.01
1-6 months prior	767	740	51	2895	1549	102	.01
1-6 months after	980	1622	77	3854	1551	52	*
7-12 months after	888	1856	86	3854	1645	38	.025
13-18 months after	774	2045	96	3709	1928	44	*
19-24 months after	636	2017	110	3024	2095	51	*

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[a] Unweighted means for NLS youth respondents who were eligible for these government programs, who enrolled at least 6 months after leaving school (see Appendix 1).

[b] Only those observations which had an observable wage during the relevant period are included.

[c] All observations are included, both those employed in 19 and those who were not.

*Significance level greater than .15.

all outcomes and samples, participant means are nearly always significantly lower than the non-participant means. This finding reveals some strong differences between participants and non-participants prior to training and not accounted for merely by eligibility and starting date matches. More will be said about these differences later.

For periods after the starting date, participant and non-participant means are generally much closer. When all individuals are included, the participant means are somewhat higher, but when only workers are included, participant means are somewhat lower than non-participant means. This difference reflects a lower labor force participation rate among non-participants. In any case, differences between these means are much less significant than those between the pre-training means, especially in the second year after training. For whatever reason, participants seem to be close to par after training.

Tables 1.7A and 1.7B report changes in these labor market outcomes between the four periods after training and the two periods before training. For example, the first mean change reported in each table is the average difference between the wage rate in the first period after training and in the second period before training. The earlier base period used in the first section of the tables should reduce the effect of purely transitory influences that often precipitate training. When the later base period is used, trainees have significantly more positive changes for most outcomes. When the earlier base period is used, however, wage change differences become insignificant, and other differences are smaller as well.

Table 1.7B excludes all those who did not report a positive wage in a given period. This reduces the magnitude of the changes in many cases, but not the result that trainees experienced a significantly greater rise in post-

Table 1.7A Changes in Labor Market Outcomes by Participation Status and Period for All NLS Youth Post-School Participants and Comparison Group Members[a]

	Participants			Non-participants			Sign. level of diff. of means test
	N	Mean change	Std. error	N	Mean change	Std. error	
I. Base Period: 7-12 months prior							
Wage rate							
1-6 months after	150	.04	.17	783	-.11	.09	*
7-12 months after	129	.03	.26	777	-.04	.09	*
13-18 months after	95	.14	.24	717	.08	.10	*
19-24 months after	66	-.07	.29	556	-.01	.10	*
Weeks employed							
1-6 months after	486	2.2	.6	2499	0.3	.2	.01
7-12 months after	418	2.3	.6	2499	0.7	.2	.014
13-18 months after	345	2.7	.8	2383	1.7	.2	*
19-24 months after	244	2.6	.9	1838	2.0	.3	*
Earned income							
1-6 months after	486	467	106	2496	86	77	.01
7-12 months after	418	498	119	2496	131	56	.01
13-18 months after	345	809	154	2380	392	63	.012
19-20 months after	244	723	176	1835	561	75	*
II. Base period: 1-6 months prior							
Wage rate							
1-6 months after	178	.52	.15	1042	-.08	.06	.01
7-12 months after	157	.65	.23	983	-.00	.08	.01
13-18 months after	130	.47	.21	912	.04	.08	.072
19-24 months after	85	.50	.26	705	.05	.09	.103
Weeks employed							
1-6 months after	641	3.7	.5	2895	0.4	0.2	.01
7-12 months after	558	4.0	.5	2895	0.7	0.2	.01
13-18 months after	469	4.1	.6	2767	1.7	0.2	.01
19-24 months after	350	4.2	.7	2184	2.0	0.3	.01
Earned income							
1-6 months after	641	841	95	2895	-31	75	.01
7-12 months after	558	936	109	2895	15	100	.01
13-18 months after	469	1077	122	2767	265	109	.01
19-24 months after	350	1050	143	2184	362	136	.01

[a] Same universe as in Table 6 - including all observations with valid data.

*Significance level greater than .15.

Table 1.7B Changes in Labor Market Outcomes by Participation Status and Period for NLS Youth Post-School Participants and Comparison Group Members with Observable Wages[a]

	Participants			Non-participants			Sign. level
	N	Mean change	Std. error	N	Mean change	Std. error	of diff. of means test
I. Base Period: 7-12 months prior							
Weeks employed							
1-6 months after	150	1.4	.9	787	-0.0	.3	.13
7-12 months after	129	1.9	.9	780	-0.2	.3	.021
13-18 months after	95	4.1	1.0	720	1.4	.3	.011
19-24 months after	66	2.5	1.2	558	0.6	.4	.12
Earned income							
1-6 month after	150	368	201	784	-75	127	.064
7-12 month after	129	238	237	777	27	99	*
13-18 month after	95	876	307	717	489	114	*
19-24 month after	66	656	385	556	435	111	*
II. Base period: 1-6 months prior							
Weeks employed							
1-6 months after	178	3.0	.7	1046	0.1	.3	.01
7-12 months after	157	3.5	.9	986	0.1	.3	.01
13-18 months after	130	4.6	.9	915	1.2	.3	.01
19-24 months after	85	4.4	.9	708	0.8	.3	.01
Earned income							
1-6 months after	178	1075	229	1046	-244	199	.01
7-12 months after	157	1053	276	986	-249	261	.01
13-18 months after	130	1137	231	915	97	288	.01
19-24 months after	85	1086	328	708	-70	365	.019

[a] Same universe as in Table 6 - including only those individuals with an observable wage for both periods.

*Significance level greater than .15.

training earnings and employment than their non-trainee counterparts. One may note, however, that the long-term results, i.e., those between the second period before training and the fourth period after training, tend to be the weakest. Although the changes for the trainees are always greater, the difference between the mean changes is often not significant even at the 15 percent level.

ANAYLTICAL CONSIDERATIONS AND SIMPLE REGRESSION RESULTS

The results in the previous section are quite suggestive. However, because none of the other factors which may have influenced these changes are accounted for, it would be premature to attribute them purely to training. Regression analysis is a standard way to control for exogenous factors so as to isolate the training effect, but some caveats are in order. Standard regression analysis, which can control for observed factors as well as for certain fixed unobserved factors in some applications, would be perfectly suitable if trainees were randomly selected from an eligible group, as in a controlled experiment. However, because training is voluntary, trainees are different from the non-trainees by the very fact that they chose to enter the program and were accepted and placed. Some differences may be self-recognition of poor labor market skills, an inability to find suitable employment, a desire to upgrade one's skills, or a realization that certain programs have something to offer. Trainees are also usually differentiated by a poor labor market history just prior to training, as indicated in Table 1.6. These differences are not explained by other observed factors, as shown by the significance of the training variable in the pre-training income regressions shown in Table 1.8. In all samples trainees have significantly lower wages, earned incomes and weeks worked than their non-trainee

Table 1.8 Simple Regression Results for Pre-Training Outcomes for NLS Youth Post-School Sample+

Dependent variable	N	Training coefficient	(Std. error)	Significant services[b]	$\bar{R}^2$ no serv.[a]	$\bar{R}^2$ all serv.[c]
I. Men						
Income - 1 yr. before	1413	-1593	(291)**	None	.0564	.0537
Wage - 1 yr. before	942	-.72	(.20)**	Basic ed. (+.65)*	.0580	.0547
Weeks worked - 1 yr. before	1413	-6.04	(1.3)**	GED (-4.5)* Skill (-4.1)* Length (.12)*	.0619	.0636
II. Women						
Income - 1 yr. before	1461	-770	(223)**	None	.0491	.0458
Wage - 1 yr. before	805	-.71	(.20)**	OJT (-.77)*	.0348	.0351
Weeks worked - 1 yr. before	1461	-2.4	(1.3)*	None	.0706	.0702

[+] Control variables are age, age squared, marital status, number of children, AFQT score, years of education, local unemployment rate, and minority status (Black, Hispanic). All observations with valid data are included.

[a] Only the control variables and the participation variable are included.

[b] Coefficients are those obtained when an individual service variable is included with the participation and control variables.

[c] Obtained when the control, participation and all service variables are included.

* Significant at .10 level.

**Significant at .01 level.

counterparts in the year previous to training. (Note that when training services used by the trainee are included in the regressions, few coefficients of these variables are significantly different from zero, and show no particular pattern.) This result warns us that a greater increase in outcome values between post- and pre-training periods for trainees admits many interpretations. In addition to the possibility that training directly increases skills and labor market value, it could be that trainees are typically those who have just experienced earnings troughs, which may be due to random factors, while non-trainees are not. If most people eventually recover from these troughs, training or no training, this particular sample could contain a spurious correlation between climbing out of the trough and enrolling in training. It is still possible, though, that training hastens recovery from these troughs but does not directly affect labor market value.

With all this in mind, simple regression results for post-training outcomes in the first year after training and the second year after training are presented in Table 1.9. It shows that after training there is rarely (1 out of 12, not significantly better than chance) any significant difference between those who have trained and those who have not. Comparing this to pre-training results, it is clear that trainees have caught up to but not surpassed the non-trainees, but whether their improvement is due to improvement in skills or just recovery from a trough is not clear. It also indicates that training services play only a small role here, with the possible exception of a positive effect for the length of time in the program, although this effect may largely be the result of experience.

Another problem is that these regressions take no account of systematic but unobserved differences between those who choose to work and those who do not. The wage regressions include observations for all individuals who report

Table 1.9 Simple Regression Results for Post-Training Outcomes for NLS Youth Post-School Sample+

Dependent variable	N	Training coefficient	(Std. error)	Significant services^b	$\bar{R}^2$ no serv.^{a}	$\bar{R}^2$ all serv.^{c}
I. Men						
Income - 1 yr.	2138	381	(283)	Job couns. (-1361)** Length (37)**	.0291	.0347
Income - 2 yrs. after	1643	-158	(388)	None	.0298	.0285
Wage - 1 yr. after	1436	-.16	(.16)	None	.0551	.0564
Wage - 2 yrs. after	1372	.11	(.19)	Job couns. (-.71)*	.0612	.0626
Weeks worked - 1 yr. after	2138	.87	(1.1)	None	.0301	.0296
Weeks worked - 2 yrs. after	1643	-1.9	(1.4)	None	.0283	.0251
II. Women						
Income - 1 yr. after	2208	299	(182)	Length (22.8)*	.0932	.0951
Income - 2 yrs. after	1682	134	(237)	None	.1164	.1145
Wage - 1 yr. after	1270	-.12	(.12)	None	.0689	.0653
Wage - 2 yrs. after	1187	-.17	(.15)	None	.0696	.0662
Weeks worked - 1 yr. after	2208	2.3	(1.1)*	GED (-5.5)* Length (.17)* Subs. empl. (3.7)*	.1174	.1216
Weeks worked - 2 yrs. after	1682	1.6	(1.3)	None	.1176	.1155

+Control variables are age, age squared, marital status, number of children, AFQT score, years of education, local unemployment rate, and minority status (Black, Hispanic). All observations with valid data are included.

Table 1.9 (continued)

[a] Only the control variables and the participation variable are included.
[b] Coefficients are those obtained when an individual service variable is included with the participation and control variables.
[c] Obtained when the control, participation and all service variables are included.
* Significant at .10 level.
**Significant at .01 level.

a wage in the period, while the income and weeks worked regressions include all individuals who were out of school and in the sample during the period. Clearly some correction for the selectivity bias which may result should be introduced.

The next section presents a model which deals with many of the issues raised here and shows results from that model.

TRAINING EFFECTS AFTER SELECTIVITY AND AUTOCORRELATION ADJUSTMENTS

A model can be developed to estimate the effects of training which takes account of several factors not dealt with in the previous section. They are:

(1) Some individuals earn more and work harder than others due to unobservable but non-random factors such as ambition or ability. These increase the error in measurement of training effects. To the extent that these factors and their effects on outcomes are unchanging and permanent, their influence can be eliminated by modeling changes in outcomes, such as those measured in Tables 1.7A and 1.7B.

(2) Random factors can influence outcomes in each period. For example, some people may have bad luck in searching for jobs, or be fired in favor of the boss's son-in-law. To some extent, the effects of these factors may persist into periods after that in which they occur, possibly via employment records. It is possible that training reduces the persistence of these factors, or helps the trainee "get out of a rut." This change in the autocorrelation coefficient for outcome errors is modeled explicitly.

(3) Trainees may decide to enroll because they are experiencing bad luck in the labor market. Non-trainees may be experiencing average or better-than-average luck. If, in the next period, the effect of last period's luck is diminished, and each person gets a fresh "roll of the die," we would expect

trainees to show a larger increase in income because they started out lower. Because their observed improvement may be due to the fact that trainees are a selected sample of those with bad luck in the base period, the portion of the increase in income due to these luck factors, or random errors, is not a valid training effect. By estimating a training decision based on observable factors, we can calculate the expected size of these base period errors and include them in the regressions. This procedure controls for a source of selectivity bias which is most likely to lead to errors in estimating the training effect.

(4) Only those who worked in the period before training and at least one period after training can be included in the outcome change estimations. Because those who decide to and find work are somewhat more likely to have experienced good luck in the labor market, luck is another error factor which can affect outcome changes. This error factor can be controlled by estimating a work decision and calculating the size of the error expected given this decision.

To clarify this discussion, a model of outcomes is presented below. (A more detailed model and derivation of the estimation technique can be found in Appendix 2.) The outcome (income, wage rate or weeks worked) in the period before training is:

$$(1) \quad Y_0 = \underline{\beta}_0'\underline{X}_0 + \phi + \epsilon_0$$

where Y_0 is the outcome, $\underline{X}_0$ is a vector of observable factors such as age, education, etc., ϕ is an unobservable effect such as ability, which is constant over different time periods, ϵ_0 is a random factor (luck), and β_0 is a vector of coefficients representing the effects of observable factors. Y_0, $\underline{X}_0$, ϕ and ϵ_0 will differ among individuals, while $\underline{\beta}_0$ is assumed to be the same for all individuals. Arguments expressed above stress that the unobservable factors ϕ and ε_0 may differ systematically between trainees and controls.

The outcome in the first post-training period for controls is:

(2a) $Y_1 = \underline{\beta}_0'\underline{X}_1 + \phi + \rho\varepsilon_0 + \varepsilon_1$.

Hence the effect of observable factors does not change except insofar as $\underline{X}_1$ differs from $\underline{X}_0$. There is some persistence of earlier luck, shown by the coefficient ρ, with a new random factor ε_1 introduced.

The outcome in the first post-training period for trainees is:

(2b) $Y_1 = \underline{\beta}_1'\underline{X}_1 + \phi + \pi\varepsilon_0 + \varepsilon_1$.

Hence training is allowed to affect both the coefficient vector $\underline{\beta}$, which includes the intercept, and the persistence factor, which becomes π.

A person will decide to train if the part of future income known *ex ante* is greater with training than without training, i.e., if

$$\underline{\beta}_1'\underline{X}_1 + \phi + \pi\varepsilon_0 > \underline{\beta}_0'\underline{X}_1 + \phi + \rho\varepsilon_0, \text{ or}$$

(3) $(\underline{\beta}_1' - \underline{\beta}_0')\underline{X}_1 > (\rho - \pi)\varepsilon_0$.

Hence, if training reduces the correlation between random errors, i.e., $\pi < \rho$, a negative ε_0 (bad luck) in the initial period makes enrollment in training more likely. Reversing this logic, if we observe someone who has trained, it is likely that ε_0 was negative.

Because of the unobservable influence of ϕ, estimation of the outcome equations (1), (2a) and (2b) is imprecise. By observing outcome changes, we difference out the effect of ϕ. For trainees, for example,

(4a) $Y_1 - Y_0 = (\underline{\beta}_1 - \underline{\beta}_0)'\underline{X}_1 + \underline{\beta}_0'(\underline{X}_1 - \underline{X}_0) + (\pi - 1)\varepsilon_0 + \varepsilon_1$

For non-trainees,

(4b) $Y_1 - Y_0 = \underline{\beta}_0'(\underline{X}_1 - \underline{X}_0) + (\rho - 1)\varepsilon_0 + \varepsilon_1$.

If T represents a dummy variable for training, this change can be expressed in a single equation for both groups:

(5) $Y_1 - Y_0 = T(\underline{\beta}_1 - \underline{\beta}_0)'\underline{X}_1 + \underline{\beta}_0'(\underline{X}_1 - \underline{X}_0) + (1 - T)(\rho - 1)\varepsilon_0 +$

$$T(\pi - 1)\varepsilon_0 + \varepsilon_1$$

Knowledge of the training decision result shown by (3) yields information on the value of ε_0. Ignoring this information in the estimation of (5) can bias the estimate of $(\underline{\beta}_1 - \underline{\beta}_0)$, which measures the direct training effect.

Some outcomes, such as wage rates or positive income and weeks worked, are observed only if the person has decided to be in the labor force. This decision also involves the value of ε_0 (see Appendix 2) and hence yields information for the estimation of outcome changes in (5). These decisions must be estimated simultaneously, and the correlation coefficient in this (bivariate probit) estimation is a direct function of $(\pi - \rho)$. (Only the work decision in the initial period is considered here, for two reasons. First, it is the most significant in that more people do not work in that period than in future periods. Secondly, adding more decisions to this model would render it too cumbersome for reasonable estimation.)

Table 1.10 gives results for the training and work decisions. For men, age and AFQT score are negative influences on training enrollment, but being black, Hispanic or in a high unemployment area makes one more likely to enroll. For women, having children or a high AFQT score make one less likely to enroll, but being married, more educated, black, Hispanic or in a high unemployment area are positive influences on enrollment. Work decisions have been discussed widely, and the results are pretty much as expected except for the AFQT score and local unemployment rate results. The latter may be explained by noting that these individuals are young people who may be more likely to work to help support the family if the head of the household is unemployed.

The correlation coefficient directly tests the null hypothesis that expected autocorrelation, or persistence, of errors is the same whether

Table 1.10 Participation Decision and Pre-participation Work Decision Results for NLS Youth Post-School Sample

Variable	Men		Women	
	Coefficient	(Std. error)	Coefficient	(Std. error)
Training				
Constant	5.47	(2.0)**	-4.5	(2.5)*
Age	-.57	(.19)**	.25	(.23)
Age squared	.012	(.004)**	-.0057	(.005)
Marital status	--	--	.26	(.056)**
Children	--	--	-.105	(.029)**
Education	-.0098	(.014)	.035	(.018)*
AFQT score	-.0051	(.0012)**	-.0042	(.0016)**
Black	.308	(.055)**	.512	(.065)**
Hispanic	.117	(.059)*	.324	(.075)**
Local unemp. rate	.085	(.008)**	.069	(.009)**
Work				
Constant	-2.28	(1.9)	2.75	(3.0)
Age	.277	(.19)	-.41	(.29)
Age squared	-.0083	(.0047)	.010	(.007)
Children	.150	(.054)	-.125	(.041)**
Marital status	--	--	.151	(.071)*
Home reading materials	-.06	(.027)*	--	--
Black	-.268	(.064)**	-.39	(.081)**
Hispanic	.114	(.070)	-.011	(.09)
AFQT score	-.0069	(.0015)**	-.0047	(.002)*
Local unemp. rate	.050	(.009)**	.012	(.011)
Education	.047	(.017)**	.152	(.016)**
Correlation coefficient	-.349	(.018)**	-.121	(.023)**
X^2 test statistic (d.f.)	116.3	(16)**	225.3	(18)**
N	1672		1717	

* Significant at .10 level.

**Significant at .01 level.

training intervenes or not. The significantly negative correlation for both sexes supports the alternative that training is expected to reduce the autocorrelation of errors in outcomes (i.e., help get them out of a "rut," even without improving labor market skills).

OUTCOME CHANGE RESULTS

The regressions presented here model changes in outcomes between post-training and pre-training periods. The base period is the year immediately prior to the starting date, and the future period is either the first year or the second year immediately following training. Thus both 1-year and 2-year changes are included in the regression.

Among the explanatory variables, the first important one is the participation dummy variable, which will always be present. The basic level variables are age, age squared, AFQT score, education, minority status dummies, marital status and number of children, and the local unemployment rate. Another group that will always be present in the regressions will be changes in these basic variables between pre- and post-training periods. If outcomes are correctly modeled as a linear function of the level variables, changes in outcomes should be explained by changes in the levels. However, if the true outcome specification is non-linear, level variables should be included in the outcome change regressions. Hence results will be shown both with and without these level variables. Another group consists of the variables created by multiplying the participation dummy by the level variables, which will be called interaction variables. If training affects the outcome equation parameters and not just its constant term, these interactions should be included. Finally, selectivity correction terms created by estimating the conditional means of the pre-training outcome errors via the work and training decisions. These are allowed to have different coefficients for different periods, as well as for participants and non-participants. These terms should reveal the part of observed outcome change that is due solely to differences in pre-training outcome errors, and not to any direct effect of training on outcomes. However, if the coefficients of these terms turn out to be different for participants and non-participants, this difference reveals a difference in the persistence of pre-training errors for the two groups. This difference in error persistence may be considered an indirect effect of training.

MEN

The inclusion of different groups of variables can make seemingly large differences in results. Since the income change regressions explain the most variation and generally tell the same story as the other outcome regressions, a series of results for income change regressions is shown in Table 1.11.Each regression includes a participation variable and the changes in the basic variables, and some combination of levels, interactions and selectivity variables. For each regression is shown the coefficient of the participation dummy, and the sums of the effects of the interaction and selectivity variables (in the first period) when trainee means for the regressors are used.

The first regression, with changes alone, presents a training effect of an average income increase of $1181 more for trainees than for non-trainees. This increase more or less reveals the same story as the difference of means tests shown in Table 1.7B, with a few regressors added. However, when the selectivity terms are added, the adjusted R-squared doubles and the training effects is reversed dramatically. This second regression says that trainees'

Table 1.11 Regression Results for Changes in Income - Males (N = 1482)+

Explanatory variables	Participation coefficient[a]	Mean effect of interactions	Mean effect of selectivity	$\bar{R}^2$
1. changes	1181** (359)	-	-	.0158
2. changes, selectivity	-4285 (1826)	-	5725	.0306
3. changes, levels	1119** (357)	-	-	.0400
4. changes, levels, selectivity	-2410 (2018)	-	3730	.0427
5. changes, interactions	-10367 (32910)	11421	-	.0231
6. changes, interactions, selectivity	-24698 (35182)	25811	814	.0433
7. changes, levels, interactions	-25093 (16753)	26148	-	.0469
8. changes, interactions, levels, selectivity	-35214 (39138)	35786	1132	.0486

+See text for descripton of explanatory variables. Coefficients are in terms of 1980 dollars per year.

[a] Numbers shown in parentheses are conventional standard errors. When selectivity terms are included in the regression these may understate true standard errors.

**Significant at the .01 level.

earnings rose by $4825 less than non-trainees due to observable factors but trainees received a $5725 larger-than-average random increase in the first period due to their abnormally low incomes in the pre-training period. The rest of the difference ($291) is due to a lower-than-average random increase for non-trainees due to above-average luck in the pre-training period. Although these numbers may be larger than expected, they illustrate that changes in luck may play a big role in the observed income improvement of trainees.

The third regression includes the level variables, which again have a significant effect on total variation explained, but the result for the participation variable is the same as for the first regression where the non-randomness of errors is not accounted for. Inclusion of the selectivity terms again reverses the training effect. The difference between the training effect in the second and fourth regressions reveals that without other variables as a buffer, in order to allow small differences in the selectivity terms to have some effect the participation coefficient is levered downward as an intercept might be. The fourth regression suggests that the direct training effect is not significantly different from zero.

The last four regressions include interaction terms and hence the participation coefficient is an intercept only, so to get the full effect of training explained by observables this coefficient and the interaction effect must be added together. These interactions show that trainees with more education and higher AFQT scores fared better, while those married or with children had smaller-than-average outcome improvements after training. The interaction effects shown here do not include minority status effects, so the effect shown is for whites. In the fifth and sixth regressions we observe that the net effect of training is positive even after selectivity terms are accounted for. (It is difficult to calculate the standard errors of these mean effect estimates because of the many estimated terms involved, and these standard errors would be larger than the effect shown in any case.) Finally, the last two regressions reveal positive but insignificant training effects. Multicollinearity becomes a significant problem here.

Another result of these regressions, not shown in Table 11, is that the coefficients of the selectivity terms are never significantly different between trainees and non-trainees, suggesting that there is no difference in the actual persistence of outcome errors (i.e., that $¶ = \rho$). The training and work decision results indicate that there is an expected difference, however.

Table 1.12 presents regression results for the other outcomes for four sets of explanatory variables each. They repeat the results in Table 11 insofar as training effects are negated when selectivity terms are included. Selectivity terms have somewhat less explanatory power here than in the income regressions, but still give very plausible results for the part of the observed outcome changes that are due to changes in random errors.

Table 1.13 presents the coefficients of minority status dummy variables and training service dummy variable in outcome change regressions where changes and selectivity are other regressors. The results are very similar regardless of which other regressors are used. They show that outcome changes are less positive than average for those who received subsidized employment or job counseling but generally not significant for other services. This finding suggests that in the absence of explicit training, little human capital development takes place, and the labor market problems of trainees only worsen. The differences in effects for blacks are positive but insignificant, while for Hispanics these differences are positive and significant for wage changes.

Table 1.12 Wage and Weeks Worked Changes Regression Results - Men (N = 1482)+

Explanatory variables	Participation coefficient[a]	Mean effect of selectivity	$\bar{R}^2$
Wage			
1. changes	.41* (.19)	-	.0208
2. changes, selectivity	-1.09 (.95)	1.33	.0210
3. changes, levels	.43* (.19)	-	.0287
4. changes, levels, selectivity	-.17 (1.05)	.64	.0255
Weeks worked			
1. changes	4.33** (1.22)	-	.0112
2. changes, selectivity	-6.90 (6.20)	10.41	.0189
3. changes, levels	4.14** (1.22)	-	.0237
4. changes, levels, selectivity	-7.24 (6.86)	5.05	.0310

+See text for description of explanatory variables. Wage coefficients are in 1980 dollars per hour. Weeks worked coefficients are in weeks per year.

[a] Numbers shown in parentheses are conventional standard errors. When selectivity terms are included in the regression these may understate true standard errors.

* Significant at the .05 level.
**Significant at the .01 level.

Table 1.13 Effects of Minority Status and Services - Men (N = 1482)

Variable	Income change regr. coeff.+	Wage change regr. coeff.+	Weeks worked change regr. coeff.+
Participation	-4313 (2345)	-1.73 (1.23)	-11.5 (8.0)
Job counseling	-2860* (736)	-1.07* (.39)	-3.8 (2.5)
Subs. empl.	-2544* (809)	-.93* (.42)	-5.7* (2.8)
Skill trn.	838 (745)	.09 (.39)	4.2 (2.5)
On-the-job trn.	289 (755)	.11 (.40)	0.3 (2.6)
Basic educ.	11 (817)	-.42 (.43)	-3.3 (2.8)
GED	-1682* (825)	.55 (.43)	-3.9 (2.8)
College	-332 (980)	-.44 (.51)	6.6* (3.3)
Length	6.4 (30.5)	.010 (.016)	-.14 (.10)
Black	442 (922)	.22 (.48)	5.0 (3.1)
Hispanic	1021 (888)	1.01* (.47)	0.03 (3.0)

+The standard errors shown in parentheses may understate true standard errors.

*If inference is based on conventional standard errors, these effects are significant at the .05 level.

WOMEN

The results for women are similar but not identical to those for men. Table 1.14 presents regression estimates for the three outcomes. Interaction terms were rarely significant and blur interpretations and thus are not included in the reported regressions. (In regressions not shown, the only significant interaction that occurred indicated that trainees' wage increases are smaller when unemployment rates are high.)

One major difference for women is that no significant training effect is present even in the uncorrected regressions. When the selectivity terms are added to the change variables, the training effect becomes negative, with an increase being explained by differences in the pre-training outcome errors. This pattern is repeated in the regressions including level variables although the mean effect of selectivity becomes highly variable.

Another difference for the women's sample is that the selectivity coefficients for trainees and non-trainees are significantly different, except in the wage equation, suggesting that training may change the persistence of the pre-training outcome errors. These autocorrelation coefficients can be estimated explicitly by non-linear least squares (for the specification see Appendix 2). When estimated for an income change equation, the autocorrelation when training does not intervene is significantly greater than zero, but when training intervenes between periods the autocorrelation coefficient is not significantly different from zero. (Actual estimates are 1.74 and .44 respectively.) This finding suggests that, for women, training erases the effect of a bad start in the labor market.

Finally, Table 1.15, analogous to Table 1.13, shows regression coefficients for minority status and service dummy variables when change and

Table 1.14 Outcome Change Regression Results - Women (N = 1224)+

Explanatory variables	Participation coefficient[a]	Mean effect of selectivity	$\bar{R}^2$
I. Income			
1. changes	291 (300)	-	.0149
2. changes, selectivity	-2318 (1721)	599	.0237
3. changes, levels	262 (305)	-	.0253
4. changes, levels, selectivity	-2383 (3021)	5737	.0417
II. Wages			
1. changes	.16 (.18)	-	-.0008
2. changes, selectivity	-1.94 (1.04)	.76	.0036
3. changes, levels	.18 (.18)	-	.0132
4. changes, levels, selectivity	-1.54 (1.83)	.33	.0108
III. Weeks Worked			
1. changes	1.41 (1.40)	-	.0198
2. changes, selectivity	-8.4 (8.1)	4.2	.0272
3. changes, levels	1.22 (1.4)	-	.0306
4. changes, levels, selectivity	9.7 (14.2)	17.1	.0432

+See text for description of explanatory variables. Income coefficients are in 1980 dollars per year. Wage coefficients are in 1980 dollars per year. Weeks worked coefficients are in weeks worked per year.

[a] Numbers shown in parentheses are conventional standard errors. When selectivity terms are included in the regression these may understate true standard errors.

Table 1.15 Effects of Minority Status and Services - Women (N = 1224)

Variable	Income change regr. coeff.+	Wage change regr. coeff.+	Weeks worked change regr. coeff.+
Participation	-1980 (2813)	-1.23 (1.71)	5.4 (13.2)
Job counseling	-40 (643)	-.58 (.39)	0.8 (3.0)
Subs. empl.	156 (817)	.61 (.50)	-2.0 (3.8)
Skill trn.	-1248 (709)	.14 (.43)	-8.2* (3.3)
On-the-job trn.	220 (654)	.03 (.40)	-3.5 (3.1)
Basic educ.	700 (740)	.47 (.45)	1.0 (3.5)
GED	1139 (833)	-.43 (.51)	-1.0 (3.9)
College	-962 (854)	.86 (.52)	-5.5 (4.0)
Length	-32.5 (28)	-.007 (.017)	.16 (.13)
Black	745 (1196)	-.28 (.72)	1.1 (5.6)
Hispanic	610 (1076)	.58 (.65)	-2.8 (5.0)

+The standard errors shown in parentheses may understate true standard errors.

*If inference were based on conventional standard errors, these effects would be significant at the .05 level.

selectivity variables are also included. Skill training has a negative effect on weeks worked, but no other effects are significant. All minority status effects are smaller than their standard errors. The results for subsidized employment and job counseling are different from those for men; this difference suggests that the labor market deficiencies these programs address differ by sex, and thus certain services may be more successful for one sex than for the other.

CONCLUSION

Trainees, particularly male trainees, seem to be better off in post-training periods than they were in pre-training periods. However, no observable factor explains their pre-training state. This result suggests that trainees may have gotten a "bad draw" in the labor market, and bad luck may have led to their decision to train. To the extent each person gets a new draw each period, although with some persistence of the effects of previous draws, the observed improvement for trainees may be due to elimination or reduction of a previous bad draw. Non-trainees had no such bad draws in pre-training periods, and thus have not as much room for random improvement. The results in this chapter suggest that this is the case. For women, training seems to reduce the persistence of previous draws, and this reduction may be considered an indirect training effect. No significant positive direct training effects for either sex are found.

Measurement of the effects of previous bad draws, or outcome errors, of this sort is still imprecise. Also, sample sizes were not particularly large, because many individuals had not had time to leave school, enter training, and be observed for at least one year after training during the five-year span covered by these data. Addition of another year's observations will significantly increase the base for this estimation, and will allow for predictive tests of future outcomes using the models developed here. It will also allow for refinement of the modeling and estimation of the autocovariance structure of earnings, as well as for measurement of more long run effects of training.

Chapter 1 References

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Appendix 1

Preparation of Data for Evaluation

Trainees

Each job or program an NLS youth respondent reports is classified as to whether it is government-subsidized or not. If any job held by a respondent is so classified, that respondent is a "trainee."

Some respondents have held more than one subsidized job. For the purpose of this evaluation it is necessary to focus on a single "training period." Thus, when more than one subsidized job is reported, jobs are "weeded out" in the following order: 1) If two jobs in the same program end and start respectively within two weeks of each other, they are concatenated into one job. 2) Jobs of less than four weeks duration and summer jobs with no training component are deleted. Summer jobs are defined as beginning no earlier than the 22nd week of the year, and ending no later than the 35th week of the same year. Jobs with no training component are defined as those in which neither on-the-job training, skill training, GED services, college services nor basic education services are reported. 3) Jobs which began before the person left school (for at least one year) are deleted. If more than one subsidized job remains, the job period of maximum length is defined as the "training period." There are a total of 2617 respondents who ever participated in a subsidized employment or training program.

Comparison Group

Inclusion of a respondent in the comparison group is based on eligibility for CETA or WIN in a given calendar year. WIN eligibility is based on being a welfare recipient. CETA eligibility derives from either being a welfare recipient or below 70 percent of the lower living standard income level. By these standards, 8679 respondents (including actual participants) were eligible for at least one program at some time.

For the purposes of this evaluation, it is desirable to have a point in time at which an eligible non-trainee "decides" not to enter the program, in order to have "before" and "after" training stages for comparison. This point was determined by calculating, for each year, the percentage of a certain age level (e.g., 16-year-olds) who started actual training in each month of the year. Eligibles in a given year of a certain age were then "assigned" a starting monthly randomly using probabilities based on the actual monthly percentages. For those eligible in more than one year, one year and its "assigned" month were chosen randomly using equal probabilities for each year. This age-specific month-by-month match-up is used to duplicate seasonal and economic conditions that otherwise would be difficult to control for.

Post-School Group

For this study, only those whose starting date fell after they left school were retained for this study. (Leaving school is defined as not returning to school within one year.) This left 1140 trainees and 3854 non-trainees with valid data for crucial training variables. A total of 17 observations were dropped due to invalid starting or stopping dates, or for reported hourly wages over $50. These are the data analyzed in the section called "Preliminary Comparisons." If reported wages exceeded $50 per hour, or annual earned income exceeded $200,000, that variable value was dropped from the analysis of means. For the following section, some observations were deleted due to invalid observations on crucial explanatory variables, leaving a total of 1069 trainees and 3526 non-trainees for the analysis. (Most of the invalid data were for AFQT scores.) Any observations that contained full data for the variable of interest were used for a given calculation (e.g., with the regressions involving the change in income over two years, the individual must have been out of school for one full year before the training data and must have been observed for two full years after leaving training). These sample sizes are included in the appropriate tables in the chapter. Means and standard deviations for explanatory variables for this sample are shown in Table 1.A1.

For the final analysis it was necessary that the individual be out of school for at least six months prior to the training decision, so that the pre-training work decision could be included, as well as that the individual have valid data for the variables used in the analysis. These requirements allowed sample sizes of 1382 non-trainees and 435 trainees in the female group, and 1281 non-trainees and 391 trainees in the male group. Relevant sample sizes for the selectivity-corrected regressions are shown in the appropriate tables.

Table A1 Means and Standard Deviations for the Post-School Sample

Variable	Male participants	Male non-participants	Female participants	Female non-participants
Age (prior)	19.5 (2.1)	20.3 (2.0)	19.8 (1.9)	20.2 (2.0)
Educ	10.6 (2.0)	11.0 (2.0)	11.3 (1.7)	11.1 (2.1)
AFQT	52.5 (21.3)	60.7 (23.2)	55.7 (20.0)	60.6 (22.2)
Unemployment rate (prior)	8.1 (3.2)	7.1 (2.4)	8.0 (3.0)	7.2 (2.6)
Unemployment rate (post-training)	8.9 (2.6)	8.1 (2.7)	9.1 (2.7)	8.2 (2.9)
Marital status (prior)	.85 (.36)	.74 (.44)	.74 (.44)	.53 (.50)
Marital status (post-training)	.77 (.42)	.68 (.47)	.64 (.48)	.47 (.50)
Children (prior)	.12 (.40)	.18 (.49)	.47 (.75)	.60 (.85)
Children (post-training)	.18 (.51)	.24 (.58)	.60 (.85)	.77 (.93)
Black	.39 (.49)	.26 (.44)	.42 (.49)	.24 (.42)
Hispanic	.17 (.38)	.15 (.36)	.20 (.40)	.16 (.37)

Appendix 2

Model Specification and Estimation

We assume that individual earning power can be represented in the following way:

$$Y_{it} = \beta_j X_{it} + \phi_i + \varepsilon_{it}$$

where Y_{it} = earning power: annual earnings or hourly wage

X_{it} = explanatory variables

ϕ_i = unobservable fixed effect

ε_{it} = random error

i indexes individuals, t indexes time periods

j = 0 if person has not trained, 1 if person has trained

Thus, the X_{it} are exogenous variables whose influence on earning power may be affected by training. The error term is assumed to have a normal distribution with zero mean, such that Var $(\varepsilon_{it}) = \sigma^2 \; \forall$ i, t and

$$\text{Cov}\,(\varepsilon_{it}, \varepsilon_{kt+1}) = 0 \text{ if } i \neq k,$$
$$\rho \text{ if } i = k, \text{ no training between periods}$$
$$\pi \text{ if } i = k, \text{ training between periods.}$$

Thus the autocorrelation of the error terms may change if the individual goes through training. Henceforth the individual subscript will be suppressed.

In addition, we assume ϕ is distributed normally with mean zero and variance ω^2, and is uncorrelated with other errors.

We consider two decisions relevant to the individual in this context: whether to work, and following that, whether to train. The work decision takes place in period t = 0, and is based on a comparison of Y_0 and some reservation level R_0, such that $R_0 = \alpha X_0 + \varepsilon_R$. (We assume that Var $(\varepsilon_R) = \sigma^2$ and that it is uncorrelated with any other error). Hence the individual works in period 0 if and only if

$$Y_0 > R_0, \text{ or } \varepsilon_0 - \varepsilon_R + \phi > (\alpha - \beta)X_0, \text{ or } V_1 > aX_0$$

where

$$\mathrm{Var}\,(\varepsilon_0 - \varepsilon_R + \phi) = 2\sigma^2 + \omega^2$$

$$a = (\alpha - \beta) / \sqrt{2\sigma^2 + \omega^2}$$

$$V_1 = (\varepsilon_0 - \varepsilon_R + \phi) / \sqrt{2\sigma^2 + \omega^2}$$

$$\mathrm{Var}\,(V_1) = 1$$

The training decision takes place at the end of period 0 and compares the expected value of earning power in period 1 with and without training. Thus, the individual trains if and only if

$$E(\beta_1 X_1 + \phi + \pi\varepsilon_0 + \varepsilon_1) > E\,(\beta_0 X_1 + \phi + \rho\varepsilon_0 + \varepsilon_1) \text{ or}$$

$$\beta_1 X_1 + \phi + \pi\varepsilon_0 > \beta_0 X_1 + \phi + \rho\varepsilon_0$$

assuming perfect information on all variables and parameters except future errors. Hence, training takes place when

$$(\pi - \rho)\,\varepsilon_0 > (\beta_0 - \beta_1)X_1 \text{ or}$$

$$V_2 > cX_1$$

where $\mathrm{Var}\,((\pi - \rho)\,\varepsilon_0) = (\pi - \rho)^2\sigma^2$

$$V_2 = (\pi - \rho)\varepsilon_0 / |\pi - \rho|\,\sigma$$

$$c = (\beta_0 - \beta_1) / |\pi - \rho|\,\sigma$$

$$\mathrm{Var}\,(V_2) = 1$$

$$\mathrm{Cov}\,(V_1, V_2) = (\pi - \rho) / (|\pi - \rho|\sqrt{2 + k})$$

where $k = \omega^2/\sigma^2$.

Estimation of earning power equations is made difficult by large fixed effects which are not randomly distributed among trainees and non-trainees (as documented by the pre-training earnings equations in the chapter) and thus are likely to bias estimates of training effects. Estimates of earning changes, i.e., $Y_1 - Y_0$, difference out this fixed effect, but still leave an error term which can differ systematically according to work and training. This is the well-known selectivity problem. That is,

$$Y_1 - Y_0 = \beta_0 (X_1 - X_0) + (\rho - 1)\varepsilon_0 + \varepsilon_1 \text{ for non-trainees, and}$$

$$Y_1 - Y_0 = (\beta_1 - \beta_0)X_1 + \beta_0 (X_1 - X_0) + (\pi - 1)\varepsilon_0 + \varepsilon_1 \text{ for trainees, and}$$

$$E((\varepsilon - 1)\varepsilon_0 + \varepsilon_1 \mid V_2 < cX_1 \text{ and } V_1 > aX_0) \neq 0$$

$$E((\pi - 1)\varepsilon_0 + \varepsilon_1 \mid V_2 > cX_1 \text{ and } V_1 > aX_0) \neq 0,$$

which violates the zero mean error assumption for regression analysis. However, by observing the work and training decisions and estimating their parameters we can obtain estimates of the conditional means of these error terms and insert them in the earnings change equation to yield consistent estimates of $(\beta_1 - \beta_0)$, the parameter vector of interest.

The work and training decisions must be estimated jointly because their errors have a bivariate normal distribution with correlation coefficient $r = (\pi - p) / (|\pi - p| \sqrt{2 + k})$. A likelihood function can be constructed and maximized under these conditions, and estimates of (-a), (-c) and r are presented in Table 10 of the chapter. Standard errors are estimated via the outer product of the first derivative vector at the optimum.

The earnings equations then become

(i) for trainees:

$$\begin{aligned} Y_1 - Y_0 &= (\beta_1 - \beta_0) X_1 + \beta_0 (X_1 - X_0) \\ &\quad + (\pi - 1) r\sigma \sqrt{2 + k}\, E\{V_1 \mid V_1 > aX_0, V_2 > cX_1\} \\ &\quad + (\pi - 1) (\sigma / \sqrt{2 + k})\, E\{V_2 \mid V_1 > aX_0, V_2 > cX_1\} + \varepsilon_1 \\ &= (\beta_1 - \beta_0) X_1 + \beta_0 (X_1 - X_0) \\ &\quad + (\pi - 1) r\sigma \sqrt{2 + k}\, \Lambda_1 + (\pi - 1) (\sigma / \sqrt{2 + k})\, \Lambda_2 + \varepsilon_1 \end{aligned}$$

(ii) for non-trainees:

$$\begin{aligned} Y_1 - Y_0 &= \beta_0 (X_1 - X_0) + (\rho - 1) r \sigma \sqrt{2 + k}\, E\{V_1 \mid V_1 < aX_0, V_2 > cX_1\} \\ &\quad + (\rho - 1) (\sigma / \sqrt{2 + k})\, E\{V_2 \mid V_1 < aX_0, V_2 > CX_1\} + \varepsilon_1 \end{aligned}$$

$$= \beta_0 (X_1 - X_0) + (\rho - 1) r \sigma \sqrt{2 + k}\, \Lambda_1 + (\rho - 1)(\sigma / \sqrt{2 + k})\, \Lambda_2 + \epsilon_2$$

where Λ_1 and Λ_2 are estimated using the results of the work and training decisions. (Formulas for these conditional means can be found in Johnson and Kotz (1972), p. 113). This procedure is similar to one presented by Catsiapis and Robinson (1982), where a derivation of the appropriate standard errors can be found. Conventional standard errors only are reported in this chapter, however.

By assuming that the same selection rules apply to observation of earning power in the second period after training, we have earnings equations that are

(i) for trainees:

$$Y_2 - Y_0 = (\beta_1 - \beta_0) X_2 + \beta_0 (X_2 - X_0) + \rho(\pi - 1) r \sigma \sqrt{2 + k}\, \Lambda_1 + \rho(\pi - 1)\sigma / \sqrt{2 + k}\, \Lambda_2 + \epsilon_2$$

(ii) for non-trainees:

$$Y_2 - Y_0 = \beta_0 (X_2 - X_0) + \rho(\rho - 1) r \sigma \sqrt{2 + k}\, \Lambda_1 + \rho(\rho - 1)\sigma / \sqrt{2 + k}\, \Lambda_2 + \epsilon_2.$$

Note that the coefficients of the selectivity terms differ from their first-period counterparts by a factor of ρ, the usual autocorrelation coefficient. Also note that these coefficients would be the same for a given period for trainees and non-trainees if $\pi = \rho$. This confluence can be tested in a straightforward way.

By appropriate use of trainee and period dummy variables, all observed earnings change can be estimated in a single regression to obtain estimates of $(\beta_1 - \beta_0)$, β_0 and the selectivity term coefficients. By using non-linear least squares, direct estimates of ρ and π can be calculated.

Chapter 2

Early Labor Market Differentiation Among Terminal High School Graduates

Ronald D'Amico
Paula Baker

Despite much discussion of the critical nature of the school to work transition surprisingly little research has utilized longitudinal data to study the labor market entry process. This study focuses on the youth cohort of the NLS in the period just before and just after leaving school in order to address three broad issues: (1) What experiences characterize the school to work transition for this cohort of youth? (2) What determines why some youth have a smoother transition or a more remunerative first job than others? (3) Do initial labor market advantages persist? The latter question amounts to asking whether mobility channels are established upon labor market entrance, giving rise to relatively favorable or unfavorable career trajectories, or whether the early years in the labor market are chaotic, with initial disadvantages tending to be equalized over time.

Analyses addressing these issues will be restricted to terminal high school graduates only, for two reasons. First, terminal high school graduates, as the modal group of workers, are of interest in their own right. Second, the object of this paper is to shed light on the sorting mechanisms of the labor market. Focusing on an approximately homogeneous pool of workers enables us to investigate the determinants of early differentiation among workers who are competing in the same market. Insights gathered from this exercise will then be assumed to operate more generally across all categories of workers.

THE SCHOOL TO WORK TRANSITION IN PERSPECTIVE

Despite wide use of the concept of first job there is little agreement about precisely what first job means, how youth get sorted into first jobs, or how important initial sorting is for long range career success. On the first score, first job has variously been defined as the "first full-time job you had after you left school" (e.g., Blau and Duncan, 1967), "the first job at which you worked at least a month" when you stopped going to school full-time (D'Amico, forthcoming), and the first full-time job after the respondent left full-time schooling and participated in the labor force for a period of more than 16 months without returning to full-time schooling (Ornstein, 1976). Underlying all these definitions is the notion that entrance into the labor force is an event that can be pinpointed. But increasingly there is the realization that entrance is not an event but a process. The process of entrance may begin well before the end of schooling. Upwards of three-quarters of high school youth work during some part of their senior school year (D'Amico, 1984), and nearly all youth gather some work experience at summer jobs while still enrolled in school (Johnston and Bachman, 1973). These jobs should not be seen as frivolous experiences because they often provide useful job skills, labor market information, and other benefits. Indeed, the formation of occupational aspirations and the choice of school curriculum can all be viewed as part of the process of entering the labor market. Similarly, when labor market entrance is completed is equally vague. The normative sequence of full-time schooling or training followed by full-time employment is often violated. Large numbers of youth intersperse periods of schooling with periods of work, each period lasting a year or more, and interruptions of schooling lasting several years are not uncommon (e.g., Featherman and Carter, 1976; Campbell, et al., 1984). Similarly, training or retraining can persist well into adulthood.

Given the vagueness of the notion of first job and the imprecise boundaries of labor market entrance, one might question whether the concepts of first job and labor market entry have any meaning or utility. The prevalence of the concepts across a variety of disciplines suggests a widespread belief that first job matters. In their seminal volume Blau and Duncan (1967) find that occupational status (SEI) of first job after school accounts for a sizeable portion of the variance of occupational status at mid-career, net of education and other factors. Other articles working out of the status attainment paradigm have similarly found for the importance of first job SEI for a variety of outcomes, including adult earnings (e.g., Duncan, et al., 1972). Consistent with a neo-classical approach Birnbaum (1976) argues that different first jobs offer varying training opportunities with subsequent implications for long range levels of remuneration. The importance of first job is similarly embraced by proponents of the emerging institutional perspective on labor markets in sociology. Advocates of this model draw attention to the linkages which exist between jobs in a career, though whether these linkages can be described as a Markov process (Featherman, 1971; Kelly, 1973) and what it is about first jobs that matters most (D'Amico, forthcoming) are issues that are still unresolved. In any event, certain entry portals are held to be linked to jobs offering higher pay through internal labor markets giving rise to career ladders (Doeringer and Piore, 1976) or mobility chains which cross institutional boundaries (Althauser and Kalleberg, 1981). Other jobs are devoid of such mobility opportunities. The net result is an interrelated mesh of job slots giving rise to a finite number of regularly occurring career paths or trajectories, with some leading to steady advancement and others not (Spilerman, 1977). One should not over-simplify this model by postulating rigid and preordained job sequences; each entry job is associated with multiple branching opportunities and the possibilities for career switching or lateral moves are endless. But evidence for the highly structured nature of the labor market is accumulating (e.g., Tolbert, 1982; Kaufman and Spilerman, 1982; Stone, 1975).

In contrast to these models is a conceptualization of labor market entrance as a chaotic and relatively meaningless stage in a person's career. Reynolds (1951) sums up these sentiments when he writes, "Most youngsters (and their parents) approached the choice of a first job with no clear conception of where they were going;...in most cases the job turned out to be a blind alley which did not lead to anything better" (Reynolds, 1951: 127-128). In fact, evidence suggests that youth do not spend much time looking for the best available job but often select one of the first they are offered (Reynolds, 1951; Lipset, et al., 1955; Simpson and Harper, 1962). It has long been thought that the period just after entrance is characterized by high rates of job changing between positions which bear little obvious relation to each other (Freedman, 1969). The extent of this job mobility has caused Form and Miller (1949) to use the term "trial work period" to refer to the years of job shopping and job sampling just after completion of schooling. Freedman (1969) estimates that for terminal high school graduates rapid job-changing may persist to about age 25, with the onset of stable careers underway for most of the men she studied only by age 30. The picture one gets is of a chaotic period of transient job attachments and frequent job mobility. Under such circumstances it seems unlikely that any special significance should be attached to the very first of this sequence of jobs held in the immediate post-school period.

The final issue over which there is little agreement is the manner in which first jobs are chosen. Broadly speaking there are two models which can be applied in understanding the school to work transition, the first emphasizing the rationality of job choice and the second emphasizing the irrationality, or better, the nonrationality of choice. According to the first model, youth weigh prospective job offers on the basis of projected earnings streams and other compensations and choose the jobs which maximize their expected value. This model assumes youth have or quickly gather reasonably complete information about job opportunities and expected rewards associated with each.

The alternative model stresses the lack of information and the nexus of psychological and social constraints which narrow the range of options (e.g., Blau, et al., 1956). According to this view youth have limited information even about the job which they choose and almost no information about the advantages or availability of competing job offers. Reynolds finds that "youngsters took the first job they found and did not make comparison with any other job; their knowledge of the job before they took it was extremely meager..." (Reynolds, 1951). Occupations which are sought out are narrowly circumscribed by values, aspirations, and reward value hierarchies which in turn are determined by socioeconomic background, value systems of parents, and so on (Blau, et al., 1956).

To some extent those who emphasize the nonrational nature of career choice also tend to view the post-school period as chaotic and the choice of first job of little lasting consequence. But the correspondence is not perfect. Some researchers emphasize the constraints and lack of information within which the choice of first job is made but still claim the choice has far-reaching consequences. Indeed, this largely inadvertent nature of job choice coupled with the long-term implications of the decision make the subject of the school to work transition all the more intriguing.

THE RESEARCH PLAN

The aim of this paper is in the first instance to shed additional light on some of these issues by describing in detail the process of transition for a subsample of NLS youth. In particular we will: (1) describe the employment and unemployment experiences of youth in the period subsequent to school enrollment, (2) determine why some youth have a smoother or more successful transition than others, and (3) investigate whether initial labor market advantages persist in the several years beyond entrance. A particular objective in addressing issues 2 and 3 is to determine whether the labor market operates to channel otherwise equivalent workers into relatively favorable or unfavorable career streams.

To facilitate drawing inferences from the data we consider only terminal high school graduates. By focusing on a relatively homogeneous group of young workers who in principal should be largely inter-substitutable to employers, inferences regarding more successful or smoother routes to career entrance can be more readily made. Indeed the amount of variance in outcomes is itself noteworthy. If one holds that education is the largest component of human capital at entrance, then remuneration from employment at first job might be expected to be rather small.

Assuming variance in labor market outcomes is not insubstantial for this sample, reasons for divergence can be attributed to a limited number of factors. These are, first, human capital or other achieved attributes of individuals unrelated to years of education. These include aptitudes and abilities, information about the labor market, and previous work experience. Each of these factors can serve to differentiate between workers with identical educational credentials; each is related either to skills which may make a youth relatively more attractive to an employer or to the youth's ability to find a more advantageous employment opportunity.

Second, non-skill related attributes of individuals may cause early labor market differentiation. Included here are race, sex, background characteristics and values. Ample evidence suggests that the labor market segments workers into noncompeting groups on the basis of the first several of these (e.g., Bonacich, 1975; Duncan, 1968; Edwards, 1979) and that workers self-select on the basis of values (e.g., Filer, 1983; Polachek, 1981).

A third set of reasons for divergence in labor market outcomes, to some degree related to youth's individual aptitudes, pertain to characteristics or quality of the schooling experience, including type of school, curriculum, school resources, and so on. These variables may be significant, either because they impact on competency of instruction and hence on student abilities, as in the case of school resources; because they differentiate youth on the basis of types of skills imparted, as with curriculum; or because some schools provide better job counseling services or are labelled by employers as producing more desirable workers. Some research has already established the important role which high school experiences play in determining labor market outcomes (e.g., Kerckhoff and Jackson, 1982; Link and Ratledge, 1975), especially for terminal high school graduates (Griffin and Alexander, 1978), so this subset of variables seems particularly promising in this analysis.

Finally is the category of largely inadvertent determinants of early labor market success. The term inadvertent is used to describe factors over which young workers have little or no control. Included here are most particularly characteristics of the local labor market. Irrespective of an individual youth's aspirations or abilities, it is clear that ease of entry into the labor market and success of entry is greatly contingent upon demand characteristics of the labor market. Relevant dimensions include growth of the area, industry mix and unemployment rate at the time of entry. Evidence for the importance of regional labor market characteristics for the earnings of a sample of adult workers already abounds (e.g., Parcel, 1979).[1]

DATA

As mentioned, the analyses alluded to above will be carried out on a sample of NLS youth respondents who are terminal high school graduates.[2] While restricting the universe in this fashion may facilitate interpretation, it also gives rise to a number of associated costs which must be acknowledged at the outset. First, comparisons of the labor market experiences of high school graduates with those of either dropouts or college educated youth are not possible. Consequently, how the transition from school to work may vary for youth at different education levels cannot be addressed in this paper. Second, an important self-selection mechanism derives from the fact that the decision to seek additional schooling is not exogeneous. Some high school graduates contemplate college enrollment partly on the basis of their evaluation of present labor market opportunities for persons with twelve years of schooling. Those who appraise their employment prospects dimly will be more likely to seek additional schooling, on average. Consequently, those with the brighter prospects for a successful labor market transition are more likely to be included in the sample, ceteris paribus.

A similar selection process operates to filter this sample by our decision to restrict attention to those youth in the civilian labor force, i.e., we omit all those who had any military experience in the period after leaving school, as well as those women who may have chosen to remain out of the labor force to raise a family. These decisions were made in keeping with our aim to focus on the extent and nature of (civilian) labor market differentiation of young workers. But once again, those youth who chose the military or to remain out of the labor force after leaving school might have done so partly because they faced unappealing labor market prospects. The effect of these self-selection processes may be to further homogenize the pool of respondents considered.[3]

Of the terminal high school graduates in the NLS we must restrict the sample in two additional ways. To observe the process of transition to employment it is essential to have complete work history data in the period after last enrollment. These data are currently available for the youth from January 1, 1978 to interview date 1983. Consequently, only those who left school sometime after January 1, 1978 are considered here. Moreover, to allow at least 2 years in which to observe post-school labor force experiences, we include only those who left school at least 52 weeks prior to the date of the 1982 interview. In sum, then, the sample consists of those whose highest grade completed exactly equals twelve, who last attended school sometime in 1978, 1979, 1980, or the first months of 1981, and who did not enlist in the military. The NLS has 1,500 respondents who meet these universe restrictions. Of these a small number attended but did not complete grade 13. For these respondents, labor market experiences are evaluated in the period after leaving grade 13 rather than in the period after leaving high school. Finally, although in principle the sample is restricted to those who complete 12 years of school, some of these respondents may well return to school to complete additional years sometime in the future. Because they may anticipate getting more education, their current forays into the labor market may be desultory, giving a misleading picture of their school to work transition. However, our sample selection procedures ensure that no youth could have been enrolled in the two years prior to the 1983 interview, and interruptions in schooling of more than two years are relatively uncommon (Campbell, et al., 1984).

RESULTS

The following sections analyze the transition from school to work for the sample just described. The first section describes their employment and unemployment experiences in the period just after the date of their last enrollment. We next explore the determinants of successful or smooth labor market entrance, focusing on human capital, local labor market, school experiences and other attributes of individuals. The final section will investigate whether successful labor market entrance is related to labor market achievements measured several years after entrance. Because the NLS oversampled minority groups and poor whites, sampling weights are used for all analyses in this paper.

The Transition from School to Work

The first operational task is to create a series of variables measuring the employment and unemployment experiences in the period after leaving school. To construct these variables we make use of the extensive work history information available for each respondent. In particular, start and stop dates and periods of interruption of employment between start and stop dates are available for all jobs held between January 1, 1978 and the 1983 survey date that are "...not odd jobs...(but are) jobs done on a more or less regular basis." The number of weeks of unemployment during periods between jobs was also elicited. From this information, a weekly employment status variable was created for the period from January 1, 1978 to the 1982 survey date. For each respondent, the number of weeks of employment and unemployment in the period after the date of last enrollment can be calculated, as well as the time elapsed from date last enrolled to the onset of first employment.

In keeping with previous literature, we also make a distinction between first employment and first "real" job. "First employment" is defined to occur the first week in which the respondent was working for pay after date last enrolled. "First real job" is defined as the first employment the respondent held after date last enrolled on which the usual hours worked was at least twenty hours per week and which was held consecutively for at least two months. First real job is conceptually closest to the notion of first job as it has appeared in the literature described above. One of the tasks of this paper, in fact, is to see whether first real job usually represents an attachment of reasonably long duration or whose effects persist several years after the onset of employment.

The date last enrolled variable is created by working backwards in time from the 1983 survey to find the month and year in which the respondent was last enrolled. Date last enrolled is coded as the last week of the last month in which the respondent reported enrollment.

With the data arrayed in this fashion a variety of measures of post-school labor market experiences can be created. Table 2.1 shows the weeks of employment and unemployment in the 52 weeks after week last enrolled. Results in this table and most subsequent tables are reported separately for minority females, minority males, "white" females, and "white" males.[4] Data in the first row of the table show that nearly all youth have some exposure to the labor market in their first year after leaving school. In this respect minority females are something of an outlier in that 8.7 percent of them have

Table 2.1 Weeks of Employment and Unemployment in the 52 Weeks After Date Last Enrolled, by Race and Sex

	Females		Males	
	Minority	White	Minority	White
% with no weeks in labor force	8.7	3.7	2.6	1.8
% unemployed:				
no weeks	44.0	57.4	46.3	62.5
1 week or more	56.0	42.6	53.7	37.5
4 weeks or more	42.6	29.8	44.1	23.1
12 weeks or more	24.0	15.1	25.5	10.8
26 weeks or more	9.3	3.1	7.9	4.3
40 weeks or more	6.0	.5	1.7	1.4
Mean weeks unemployed	7.9	4.5	7.6	3.8
% employed:				
no weeks	28.5	6.6	5.3	2.6
1 week or more	71.5	93.4	94.7	97.4
4 weeks or more	69.3	92.8	93.9	95.0
12 weeks or more	59.9	86.0	86.6	91.7
26 weeks or more	44.6	72.4	67.8	81.1
40 weeks or more	30.6	52.8	42.4	66.2
Mean weeks employed	22.4	35.3	33.1	39.7
N	333	497	259	411

not spent even one week working or looking for work, a figure more than twice as large as for any other group.

About half of these youth have spent at least one week unemployed in the 52 weeks after leaving school. But although a substantial number spend one or a few weeks unemployed, the proportions drop off rather quickly after that. Between 38 and 56 percent spend at least one week unemployed, between 23 and 44 percent spend at least four weeks unemployed, and between 11 and 25 percent spend at lest twelve weeks unemployed. Prolonged unemployment lasting 26 weeks or more is experienced by a small subset of these respondents, under ten percent of all groups. In general, the unemployment experiences of males and females of the same race are quite alike, but racial differences are more pronounced.

Figures on weeks employed in the 52 weeks after leaving school present another facet of the post-school experiences of these youth. Over 90 percent of all race/sex groups except minority females have spent at least one week working, but more interestingly, the proportions remain high at levels of much more extensive work involvement. Excepting minority females, between 68 and 80 percent of these respondents worked half the year or more, and between 42 and 66 percent worked over 40 weeks. Minority females are the outlier in these tabulations, working substantially less than any other group.

In general, then, it appears that the school to work transition is not in general as turbulent a time as might have been feared. About half of these youth experience no unemployment in the 52 weeks after leaving school, and many more are unemployed for no more than a month or two. On the contrary, all groups except minority females show high levels of work intensity in the post-school period, with white males working on average nearly forty of the 52 weeks following their leaving school.

Table 2.2 shows additional information relevant in gauging the ease of the school to work transition. The first rows show a frequency distribution of weeks elapsed from date last enrolled to the start date of the respondent's first employment after school. For those respondents employed in the week of their leaving school we work backwards in time to retrieve the date this job began. Thus time elapsed can be either a positive or a negative number.[5] These figures show that a majority of youth of all race/sex groups except minority females began working no later than four weeks after leaving school and that a substantial number of these were in fact working at a job they held while still enrolled. Specifically, by date last enrolled 34 percent of white males, 20 percent of minority males, 34 percent of white females and 18 percent of minority females were working at a job which they had already held for at least one month. Nearly 70 percent of white males and 60 percent of the other groups except minority females were working within one month after graduation.

That some of these jobs are of short duration or occupy the youth for under twenty hours per week is evident by comparing these figures with those in the second panel of Table 2, which shows weeks elapsed from date last enrolled to the start of the first "real" job. Recall that the first real job is defined as a job lasting at least nine weeks and at which the respondent usually worked at least twenty hours per week.[6] As with time elapsed to first employment, the weeks elapsed to first real job could be a negative number for those working at their first job on their date last enrolled. A frequency distribution on this variable shows appreciably fewer youth working at this job soon after graduation than when just first employment was considered. Nonetheless, substantial numbers began their first real jobs while still enrolled or shortly thereafter. Specifically, 25 percent of white males,

Table 2.2 Weeks Elapsed from Date Last Enrolled to Start Date of First Real Job and First Employment, by Race and Sex

	Females		Males	
	Minority	White	Minority	White
% whose first employment began:				
at least 5 weeks before DLE	17.5	33.7	20.4	34.2
within 4 weeks before or after DLE	22.4	25.7	37.6	35.5
5-26 weeks after DLE	19.4	25.5	23.9	19.6
27-52 weeks after DLE	12.4	8.4	12.8	8.0
no first employment by 52 weeks	28.3	6.7	5.3	2.7
% whose first real job began:				
at least 5 weeks before DLE	8.4	18.0	14.2	25.2
within 4 weeks before or after DLE	17.0	21.3	24.6	26.1
5-26 weeks after DLE	21.3	34.9	31.2	28.4
27-52 weeks after DLE	15.8	11.6	15.8	13.8
no first job by 52 weeks	37.5	14.2	14.2	6.5
N	333	497	259	411

NOTE: First employment is defined as the first employment at which the respondent worked after leaving school. First real job is defined as the first employment after date last enrolled lasting at least two months and on which usual hours worked per week was at least 20 hours. The start dates of these jobs may precede the date last enrolled. Elapsed time estimates may be underestimates of actual time by several weeks because of some imprecision in the measurement of date last enrolled. Those with no first employment or first job by 52 weeks includes those who had not looked for work at all during the year (see Table 1).

though only 8 percent of minority females, had already begun working on their first job a month or more before graduation. Within one month of leaving school over 50 percent of white males, and nearly forty percent of minority males and white females had begun working at their first job. Within 6 months after graduation 70 to 80 percent of all groups but minority females had begun this job. Finally, within one year after graduation only 7 percent of white males, 14 percent of white females and minority males, but 38 percent of minority females had not had such a job.

Another perspective on the ease of transition to first real job is presented in Table 2.3. This table shows for each race/sex group the frequency distribution of the number of different employers for whom the respondents worked from their date last enrolled to the start of their first real job. Essentially this table addresses whether youth often take a series of jobs of relatively short duration or offering few hours per week of employment before finding or staying with a job of two months' duration at twenty or more hours per week. In general, repeated and quick job hopping is not very common. From 65 to 70 percent of youth hold no other job before starting their first real job and over 90 percent have no more than one such job. In short, very rapid job turnover does not appear to characterize their experiences.

Several points are worth emphasizing in the results to this point. First, a surprisingly substantial proportion of youth continue high school jobs upon graduation. This finding suggests that high school employment may be important for the school to work transition. In fact, school work experience may impart useful leads to full-time employment or valuable job skills, though of course it is not clear how long these jobs are held beyond graduation or whether youth use them to bide time until they find other

Table 2.3 Number of Different Jobs Held from Date Last Enrolled to Start of First Real Job, by Race and Sex

	Females		Males	
	Minority	White	Minority	White
% worked for:				
no other jobs	64.2	67.5	69.3	67.3
1 other job	30.7	25.9	22.0	24.7
2 or more jobs	5.2	6.6	8.7	7.9
N	254	455	239	399

NOTE: Universe restricted to those who had a first real job by the 1982 interview and, as with all analyses in this paper, were observed for at least 52 weeks subsequent to their date last enrolled. Possibly those who had not had a first real job by the 1982 survey (about 7 percent of all respondents) would on average have a larger number of different employers from their date last enrolled to the eventual start of their first job (though many of those with no first real job by 1982 spent substantial portions of their post-school period unemployed or out of the labor force). The number of different jobs reported here does not include the first real job. First real job is defined here as in Table 2.

work. In any case, this finding reinforces our earlier suggestion that the school to work transition can begin well before graduation.

Secondly, a majority of youth have what appears to be a relatively smooth transition from school to work, characterized by low or no unemployment in the post-school period and the commencement of employment within a relatively short time of leaving school. Finding a job upon graduation is thus apparently not a grave problem for most youth.

At the same time, we should not lose sight of the difficulties which some of these youth encounter. Prolonged spells of unemployment or the inability to find work of any kind even a year after graduation must present serious financial and psychic hardship for some youth. Minority females as a group seem to be especially beset by difficulties of these kinds.

Characteristics of First Real Job

Table 2.4 presents results describing the characteristics of the first real job held by these youth. Distributions by one-digit occupation and two-digit industry are shown to illustrate that sex segregation is already pronounced in these initial forays into the labor market. Table 2.4 also shows that these respondents are working close to or more than forty hours per week on average.

More interesting is the distribution on hourly wage. These results show pronounced differences by race and sex in mean rate of pay and also substantial variation within each race/sex group. The average hourly wage for white males is $5.86 and for minority females $4.21, with wages for minority males and white females falling in between these. Substantial numbers of workers earn less than the minimum wage of $3.35, but many earn more than $7.50 an hour, especially among the males.

Whether or not these first jobs represent attachments of any duration is

Table 2.4 Characteristics of First Job After Date Last Enrolled, by Race and Sex

	Females		Males	
	Minority	White	Minority	White
% by occupation:				
professional	2.8	1.7	1.5	0.9
managers	0.2	1.3	2.7	3.2
clerical	42.1	45.1	10.5	8.0
sales	5.5	8.6	4.5	2.1
crafts	2.4	0.6	15.1	21.3
operatives	14.4	13.5	21.5	31.0
laborers	1.7	2.8	17.2	19.8
service	30.3	25.5	25.6	9.4
farm	0.6	0.9	1.3	4.2
% by industry:				
agriculture, forestry	0.6	0.8	3.2	6.8
mining	-	0.3	1.1	0.7
construction	-	0.9	10.9	14.6
manufacturing	16.1	18.5	19.6	26.4
utilities	2.2	3.7	3.6	4.5
trade	32.4	33.6	38.9	32.7
finance, insurance, and real estate	8.5	14.5	3.3	1.9
business and repair service	4.7	1.4	5.0	6.8
personal service	6.3	6.7	2.3	1.2
entertainment service	1.6	0.9	1.1	1.9
professional service	20.9	14.2	7.8	2.0
public administration	6.5	4.4	3.1	0.5
usual hours worked	36.0	36.9	39.0	40.1
usual hourly wage	4.21	4.46	5.10	5.86
% whose usual hourly wage was:				
under $3.35	21.1	15.6	9.3	8.5
$3.35 to $5.00	59.7	57.5	52.8	37.8
$5.01 to $7.50	16.1	22.0	27.1	33.9
$7.51 to $10.00	2.3	4.6	6.0	12.0
$10.01 and above	0.8	0.3	4.8	7.9
N	254	455	239	399

NOTE: Universe restricted to those who had a first job by the 1982 interview date. Hourly wage is reported in 1982 dollars and is measured from the first interview subsequent to the start of the first job and the date last enrolled. For those still working on this job as of that interview date, rate of pay as of the date of interview is elicited; for all others usual rate of pay is elicited. For both groups hours worked represents a response to the question "how many hours per week do (did) you usually work at this job?"

addressed by the results in Table 2.5. The second panel of this table shows a frequency distribution on tenure with the first real job. Interestingly, the distribution seems bimodal, with many workers abandoning their first jobs rather quickly but many others maintaining their attachment longer than a year. Recall that all these jobs had to be held for at least two months to qualify as a first real job; nonetheless, over 40 percent of respondents have left these jobs within six months. Another 30 to 40 percent, however, are still working for this employer one year later. The resulting picture is of many workers finding out rather quickly that they are unsuited to the job or that the job does not offer attractive career opportunities and consequently leaving, presumably to seek employment elsewhere. Another large subset, for whom the job/person match is more suitable, show stability in their attachment.

Determinants of Labor Market Differentiation

We have seen substantial variation in both the duration of unemployment and the hourly wage on the first real job among these youth. Most youth experience none or under a few months of unemployment but many have a much rougher transition to employment: most youth earn four or five dollars on their first job but considerable numbers earn much less or much more. Understanding the factors that give rise to such differentiation among this otherwise relatively homogeneous sample is a critical policy relevant undertaking if, as others have shown (Blau and Duncan, 1967), characteristics of first job are important determinants of subsequent labor market success.

An earlier section outlined a number of factors which may give rise to such differentiation. These are: human capital attributes unrelated to years of education completed, ascribed attributes of individuals, characteristics of the schooling experience, and local labor market characteristics. The

Table 2.5 Tenure Since Date Last Enrolled with First Employer and with First Real Job, by Race and Sex

	Females		Males	
	Minority	White	Minority	White
% whose tenure with first employer was:				
1-8 weeks	26.5	24.3	26.3	26.7
9-26 weeks	35.4	31.4	31.8	28.7
27-51 weeks	18.7	17.1	16.6	14.1
52 weeks or more	19.4	27.2	25.4	30.5
N	250	464	241	394
% whose tenure with first real job was:				
9-26 weeks	44.9	39.7	46.7	40.8
27-51 weeks	22.6	21.9	21.1	18.9
52 weeks or more	32.5	38.4	32.2	40.4
N	222	425	221	377

NOTE: Tenure is calculated forward from the date of last enrollment; time spent working with a first employer or a first job before date last enrolled is not counted. The universe for the tenure with first employer is restricted to those observed for at least 52 weeks subsequent to date last enrolled or the start of first employment, whichever was later. Universe for tenure with first real job is restricted to those observed at least 52 weeks from the date last enrolled or the start of first real job, whichever was later. For the definitions of and distinction between first employment and first real job see the text and the note to Table 2.

following measures of these four categories of variables are used: AFQT score--the respondent's percentile score on the AFQT achievement test; father's education--the years of schooling completed by the respondent's father; race/sex--coded as a series of dummy variables representing the intersection of respondent's sex and minority status, with white males the omitted category in the regression equations; high school quality is measured by two variables. One is a dummy variable for whether the respondent attended a private high school. Private high schools are themselves very heterogeneous but if these schools are labelled by employers as producing higher quality graduates or young workers with better work behaviors then graduation from these schools should facilitate the school to work transition. The second measure of school quality is the percent of teachers in the school with advanced degrees, an item taken from the school survey adjunct to the NLS. Curriculum is measured by a series of dummy variables representing the respondent's self-reported field of study: college preparatory, commercial, vocational and general; the first three of these are represented by dummy variables and the fourth is the left out category. While we are accustomed to seeing college preparatory have the large significant effects in socioeconomic achievement models (Alexander and McDill, 1976), it may well be that placement in the vocational or commercial tracks are more advantageous for terminal high school graduates. High school work experience is measured by the respondent's usual hours worked per week during the senior year of high school and usual hours worked squared. Such work experience may be beneficial for a variety of reasons. It may provide youth with job skills valuable to employers, provide information about job contacts or labor market opportunities, or serve as a signalling device that the youth is highly motivated. Local labor market conditions are important by virtue of their constituting the context within which the job search is undertaken. Several such factors are considered here. Two are 1975 population size and the population growth rate over the period 1970 to 1975. All data are from the County and City Data Book, 1977 (U.S. Department of Commerce, 1978) and are for the respondent's SMSA of residence, or county of residence for those not in an SMSA. A third item, local labor market unemployment rate, coded in 6 categories, is taken from Employment and Earnings (U.S. Department of Labor, 1980 through 1983) and is for the respondent's SMSA residence or balance of state for those not in an SMSA. Additionally, for the hourly wage equation, the average wage of production workers in manufacturing is used. This item is also from the County and City Data Book, 1977 and is for the respondent's SMSA or county of residence. Inclusion of this latter variable should crudely control for cost of living differences across regions but also captures other wage differentials across local labor markets.[7]

Specifically, the dependent variables are percent of weeks in the labor force in the first 52 weeks after date last enrolled during which the respondent was unemployed and the log of the respondent's first real job hourly wage, measured in 1982 dollars--both of these variables are similar to those discussed in a previous section. Means and standard deviations for all these variables for the sample included in the regression equations are presented in Table 2.6.

Results of the percent weeks unemployed equation, shown in Table 2.7, reveal some important reasons for variation in the ease of transition to employment. Brighter students have less unemployment, presumably because their qualifications make them more attractive to employers or because they have better job search skills. Not surprisingly, the local area unemployment rate is positively associated with more unemployment in the first year after

Table 2.6 Means and Standard Deviations for Variables in the Unemployment and Log Hourly Wage Equations

	Mean	Standard deviation
Father's education	11.10	2.72
AFQT percentile score	65.03	16.20
Private high school	.03	.17
Percent h.s. teachers with degrees	48.31	23.89
Vocational curriculum	.27	.44
College preparatory curriculum	.16	.37
Commercial curriculum	.04	.20
Usual hours worked in h.s.	16.28	15.08
Usual hours worked squared	492.42	695.89
Minority male	.06	.24
Minority female	.07	.26
White female	.43	.50
Log population size	12.69	1.84
Unemployment rate	3.05	.94
Population growth rate	46.92	71.13
Average wage of prod. workers	3.90	.80
Log hourly wage of first job	1.51	.47
Percent weeks unemployed	10.8	20.75
N	815	

NOTE: See text for details of variable construction and Table 7 and the text for universe information. Sample sizes and means of independent variables except average wage of production workers are taken from the percent weeks unemployed equation using listwise deletion.

Table 2.7 Determinants of Percent Weeks Unemployed and Log Hourly Wage of First Real Job

Independent variables	Percent weeks unemployed		Log hourly wage	
	b	Beta	b	Beta
Father's education	-.268	-.035	.002	.011
AFQT score	-.176**	-.137	.003**	.088
Private high school	-4.53	-.037	-.017	-.006
Percent h.s. teachers with degrees	.043	.050	-.001	-.053
Vocational curriculum	-1.18	-.025	.030	.029
College preparatory curriculum	-2.52	-.045	.001	.001
Commercial curriculum	-4.71	-.045	-.019	-.008
Usual hours worked in h.s.	-.228*	-.166	.002	.077
Usual hours squared	.000	.006	.000	.007
Minority male	4.19	.049	-.048	-.025
Minority female	10.33**	.128	-.241**	-.133
White female	3.89**	.093	-.205**	-.218
Log population	-.069	-.006	.016	.062
Unemployment rate	2.51**	.114	-.018	-.036
Population growth rate	-.012	-.041	.000	.030
Average wage of prod. workers	-	-	.005	.009
Constant	18.91	-	1.26	-
N	815		781	
R^2	.11		.08	

NOTE: See text for details on variable constructions. The universe for the unemployment equation is restricted to those with at least one week in the labor force. The universe for the wage equation is restricted to those with a first real job by the 1982 interview. For both equations the curriculum coefficients were also nonsignificant when tested jointly.

**Significant at the .05 level.
* Significant at the .10 level.

leaving school. Those who had more work experience in high school experience considerably less unemployment. Part of the reason for this association doubtless is due to the fact that so many youth who are employed while in their senior year continue working for the same employer upon graduation. Finally, net of all these and other factors, race and sex differences in duration of unemployment are pronounced. Minority females experience 10 percentage points more unemployment and white females experience 4 percentage points more than white males.

Perhaps more surprising is what is not significant in these equations. Neither of the high school quality measures are significant. More interestingly, none of the three dummy variables representing curriculum is significant. Apparently even those youth trained in some commercial or vocational specialty explicitly geared towards imparting marketable skills do not fare significantly better. In fact, this model, which endeavors to capture a range of determinants of post-school unemployment, from the individual to the contextual, can account for no more than about 11 percent of variance in percent weeks unemployed.

Matters are in fact even worse when log hourly wage on the first real job is considered as the outcome: the R-squared is only .08 and there are fewer significant effects. Once again the race/sex dummies are important, but only one other variable, the AFQT score, attains significance. We can say surprisingly little, then, about the determinants of post-school hourly wage. We know only that some people earn much more than others and that as a group white males do best of all.

The Effects of First Job Hourly Wage

One way of interpreting this lack of effects would be to argue that who gets the better first jobs right out of school is really a matter of random chance. Those who don't make out as well engage in job hopping until they find a job whose remuneration is more in keeping with their qualifications. If this scenario were to hold, initial advantages should soon be equalized and differences in hourly wage should narrow.

Table 2.8 provides some evidence relevant to this hypothesis. This table reports on an analysis of 1983 hourly wage restricted to those respondents who had a first real job at least three years prior to 1983. These results generally do not support the contention of equalizing tendencies. A comparison of the relevant standard deviations shown in Panel A shows no evidence for a narrowing of wage differentials. Likely as workers begin to accumulate job skills or by their work behavior in other ways provide employers with a way of differentiating among them, wage differentials in fact begin to widen.[8]

Moreover, if those with poor first jobs were the ones most likely to seek better jobs by 1983, then first job hourly wage would be only weakly related to 1983 wage. The regression analysis of log 1983 hourly wage regressed on log first real job wage and other variables does not support this weak relationship, however.[9] Log first job wage is, with the race/sex dummies, the strongest determinant of 1983 wage, as the beta of .175 suggests. Thus, advantages incurred early set up powerful trajectories which others cannot easily make up. Still, the rigidities in labor market structures should not be overstated. The small R-squared for the equation, even with first job wage included, suggests a considerable amount of fluidity.

SUMMARY AND DISCUSSION

This paper began by raising three general issues: Is the transition from

Table 2.8 Regression Analysis of Log 1983 Hourly Wage

A. Descriptive Statistics

Variable	Mean	Standard deviation
First job hourly wage (unlogged)	5.33	2.34
1983 hourly wage (unlogged)	5.80	2.76

B. Regression Results

Independent variable	b	Beta
Father's education	-.000	-.002
AFQT score	.003**	.111
Private high school	-.328**	-.136
Percent h.s. teachers with degrees	.001	.067
Vocational curriculum	.014	.014
College preparatory curriculum	-.016	-.013
Commercial curriculum	.201*	.082
Usual hours worked in h.s.	.001	.043
Usual hours squared	.000	.048
Minority male	-.027	-.014
Minority female	-.238**	-.122
White female	-.166**	-.180
Log wage on first job	.172**	.175
Constant	1.17	-
R^2	.15	
N	406	

NOTE: See text for details on variable creation. The universe is restricted to those who had a first full-time job at least three years prior to 1983. Wage on the first job is measured in 1982 dollars.

* Significant at the .10 level.
**Significant at the .05 level.

school to work chaotic and marked by frequent job switching? Is the choice of first full-time job made judiciously? and Does this choice have any lasting effects? We can give definitive answers to none of these questions, yet we have shed considerable light on the nature of the school to work transition. Among this cohort there is not a great deal of average unemployment or rapid job hopping. The majority of youth experience no more than a few weeks of unemployment in the first year after leaving school and within months of graduation have found a job which they hold for at least two months. This is not to gainsay the tremendous difficulties experienced by a substantial subset, especially among minority groups.

Our second major conclusion is that despite the substantial homogeneity in human capital credentials among the youth considered here, there is still great variability in the remuneration from the first real job. We considered differences in other ascribed and achieved attributes of individuals, differences in school quality and schooling experiences, and differences in local labor market characteristics; but we were able to account for only a small fraction of this variation in hourly wage. And, importantly, these advantages were shown to persist several years beyond first job entrance.

A decade or so ago Jencks and colleagues (1973) in desperation invoked luck as an important determinant of socioeconomic achievement, a statement for which they have ever since been scorned. We are not quite prepared to embrace this interpretation without qualification. Certainly some race/sex groups are shown here to be considerably "luckier" than others. But the pool of jobs for which these youth are eligible differs greatly in terms of financial rewards offered, and employers select workers for the more remunerative of these jobs on the basis of few criteria we can uncover. Doubtless some of these differences reflect the tradeoffs some young workers make for nonpecuniary rather than wage rewards or their decisions to forego higher wages in return for investment in on-the-job training. But one is led to a view of the labor market as an arena of structured social inequality, where early labor market placement leads to long-term advantages for some and consigns others to much less attractive prospects.

Notes

[1] An additional set of factors not considered here can also be implicated. These relate to the fact that some workers may trade off higher initial wages for non-wage compensation or on-the-job training.

[2] Only those who attended and completed 12 years of schooling are considered. Thus most of those with GEDs are excluded.

[3] Of the over 10,000 cases in the youth NLS, just under 3,000 graduated from high school from January 1978 to the interview date 1981. About 450 of these enlisted in the military and about 1,000 completed at least one year of college.

[4] The "minority" categories include Hispanics and blacks; "whites" are actually non-Hispanic and non-black respondents. Combining blacks and Hispanics into a single equation doubtless masks some important differences between these two groups but small sample sizes preclude reporting results separately for each of them. Moreover, preliminary results showed these two groups to be more like each other in their post-school labor market experiences than either group was like "whites."

[5] It is not to be inferred that those with a positive time elapsed had no work experience before leaving school. Instead, it means that their first employment after the date they last attended school did not begin while they were still enrolled.

[6] Throughout this paper the term "first real job" will be used to refer to the first job held after date last enrolled lasting at least nine weeks and at 20 or more hour per week. Whenever the term first real job is encountered in this paper, the above definition should be understood.

[7] These equations also included a class rank variable in preliminary runs. This variable was significant in both equations. Coefficients on other variables were not much affected by the inclusion of this variable, except for that of AFQT, which was reduced in magnitude but remained significant in the unemployment equation. Because of the large number of missing data on this variable it was dropped from the equations presented here. AFQT can be thought of as partly representing the effect of class rank.

[8] Specifically, the standard deviation of the first job times the ratio of 1983 CPI to 1982 CPI is still less than the standard deviation of the 1983 job.

[9] This equation does not include measures of local labor market characteristics of 1983 place of residence because these data are not currently available.

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Chapter 3

Business Cycle Effects on College Enrollment Behavior*

William R. Morgan

Over the past 25 years a major goal of national policy in higher education has been equality of access. Numerous programs have been implemented at local, state, and federal levels to promote student access to higher education that is independent of an individual's sex, ethnic minority status, physical handicaps, geographic location, or urban/rural residence. This paper explores another potential source of unequal access--the year when an individual graduates from high school in relation to the business cycle. Periods of high unemployment place a strain on private and public funds used to finance higher education. If one happens to be a member of a birth cohort that graduates from high school during an economic downturn, one's life chances may be impaired relative to those who graduate during an economic boom.

Existing federal student financial aid programs are directly tied to demonstrated financial need, yet the total amount of aid available bears no necessary relationship to overall swings in the business cycle, nor to regional variations in its impact. This is despite the fact that ever since the 1930s depression an accepted goal of national social policy has been to mute the negative consequences of the business cycle on the quality of life of Americans. Various safety net programs have been developed to supplement family incomes during periods of high unemployment. Such programs are not designed, however, to help with the major human capital investment expenditure of higher education.

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*I wish to acknowledge Kenneth Chi and Yu-Hsia Chen for their skillful work in preparing the data files and executing the analyses reported in this chapter.

An abundance of research on determinants of student enrollment in higher education has produced few studies directly addressed to this topic. Terkla and Jackson's (1984) recent review of over 100 student college choice studies done by sociologists and economists in the past 25 years reported no empirical work on the possible impact of the business cycle. Major secular trends in higher education, however, have been well-documented. Foremost is the dramatic increase in total enrollment, with 22.6 percent of young adults age 25-29 having four years of college in 1980 compared to only 5.8 percent in 1940 (National Center for Education Statistics, 1982: 16). Analysis of this enrollment jump has shown its strong relationship to increased high school completion rates and to the equity gains of females and ethnic minorities (Mare, 1981). Related institutional trends are the growth of public relative to private institutions (Hight, 1975) and of two-year community colleges relative to four-year institutions (Pincus, 1980).

It is possible these gross shifts may have masked more subtle enrollment responses to fluctuating economic conditions. Gordon (1974) concluded from Census time-series data that the severest years of the Great Depression did reduce college enrollment rates, and she speculated that these declines were caused more by the increased difficulties for youth and their parents of financing college than by the depressed job market for college graduates. The latter has been a focal concern of recent work by educational economists, most notably Haggstrom (1971) and Freeman (1976) in their studies of responsive supply behavior of college-age youth. They find that college students do select more frequently those fields of specialization where related job opportunities are perceived to be expanding, but how much such perceptions affect their actual college enrollment decisions is still uncertain. Formal consideration of a possible business cycle impact on enrollments has been restricted to its biasing influence in measuring other effects rather than as a concern in itself. For example, Kniesner, Padilla, and Polachek (1977) demonstrated that a differential response to the business cycle, as measured by area unemployment rates, could explain much of the convergence in black-white rates of return to higher education reported by Welch (1973).

In considering the possible ways business cycle effects could alter college enrollment decisions, our first frame of reference is the simplified economic model below of the demand for college (Anderson, Bowman, and Tinto, 1972):

$$P_{ij} = P_{ij} (C_{ik}, W_{ik}, R_{ik}, Y_i)$$

A youth i will enter college j with probability P_{ij} depending on four factors: C_{ik} the direct costs of attending each of the set of k possible colleges (including j); W_{ik} the career advantages from attending each of the colleges in set k versus not attending (measured by the discounted present value of the expected increment in the youth's future earnings stream); R_{ik} the nonmonetary constraints (usually academic selectivity) on admissions to each college relative to the youth's measured potential (usually high school academic performance) on those characteristics; and Y_i the youth's access to private funds (usually family income and wealth) to pay for college. Thus a youth will be more likely to attend college from the set of k possible schools the lower the costs over these schools and nonmonetary constraints and the greater the perceived career advantages and access to private funding. This simple model assumes complete information on these factors for each of the k schools and that tastes for colleges are invariant across youth and schools.

An economic downturn should affect college attendance primarily via Y, secondarily via C. The increased likelihood of unemployment of the adult wage earners in the family reduces youths' access to private funds. An increased number of parents become unable, or at least less able, to contribute to financing a college education. More generally, the perception of increased risk of unemployment during an economic downturn may reduce their willingness to contribute. Severe and prolonged unemployment could also generate the "added worker" effect, an increase in job search activities of youth from affected families, further reducing the likelihood of college attendance.

College costs may increase during an economic downturn, particularly at state-supported public institutions. A reduction in state income tax funds as a result of unemployment reduces the amount of public funds available for higher education, and decreasing tax revenues may reduce the size of either the direct subsidies to institutions, the price supports of student financial aid, or both. The net result is increased costs to prospective students.

If a shortage of private funds and an increase in college costs make college attendance prohibitive, attendance becomes contingent on receipt of financial aid from outside sources. Thus the unavailability of such funds, more likely during a downturn, reduces college attendance. An alternative choice for youth, particularly for those who have a strong commitment to higher education, is to opt for a less expensive, but probably lower quality, educational experience. Three ways to lower tuition and other direct costs are to attend part-time instead of full-time, enroll in a two-year versus a four-year degree program, and attend an in-state instead of an out-of-state institution. This college quality decision, like the college attendance decision itself, rests in part on how much financial aid one is able (in the case of grants) or willing (in the case of loans) to take.

A depressed economy also reduces the opportunity costs of college attendance, perhaps resulting in increased attendance. The lowered availability of jobs and depressed wage rates reduce the total expected earnings that would be foregone by attending college. On balance, however, these reduced opportunity costs should do little to offset the more pervasive negative effect of increased direct costs. Youth who are disposed to attend college primarily because of the unavailability of work may select one of several options besides college attendance, ranging from military enlistment, homemaker responsibilities, and continuing dependency to criminal activity.

The other two major determinants of college attendance, perceived career advantages and admissions constraints, should be relatively unimportant for understanding the effects of an economic downturn on attendance. Colleges usually do not change their admissions standards, nor do students become more (or less) qualified, in direct response to the economy.[1] Similarly, the perceived life-long career advantages of a college education should be little raised or lowered by an economic downturn. The major exception would be if the downturn results in a permanent loss of noncollege job positions in an area. In that situation an increasing number of youth may seek a college degree. Specifically, the recent loss of factory positions in the durable goods manufacturing sector of the North Central region could possible serve to increase college attendance there. Again, however, the overall result of this college-going inclination is uncertain, because the college option would also be weighed against a larger set of options that are at least equally viable, including those just mentioned and alternative employment in the service sector or in another geographic region.

The second frame of reference is the standard sociological model of educational and occupational attainment (Sewell and Hauser, 1975). Since this model assumes structural equilibrium, its key parameters cannot directly capture the impact of periodic societal shifts such as an economic downturn. Its emphasis is on the persisting regularities of the socioeconomic life-cycle, in which the socioeconomic position of one's parents is mediated by schooling and transmitted forward to one's own adult socioeconomic position. The transmission occurs through a process of childhood and adolescent achievement socialization, and the decision to attend or not attend college is viewed as a principal outcome of this socialization. Parents as initiators are the primary actors, joined by siblings, peers, and teachers, until the final stages when youth who have been effectively socialized possess sufficient self-identity to make their own choices based on internalized attitudes and values.

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[1] Insofar as some colleges adjust their academic admission standards to meet enrollment quotas, academic constraints on admissions could be lower during an economic downturn if in fact that downturn reduces applications. These adjustments of individual colleges, however, should be relatively minor in relation to the structure of variation in selectivity that historically exists between colleges and types of institutions.

From this perspective an economic downturn can affect the eventual college attendance decision at any point in the youth's development when it interrupts or impairs the performance of key socializers. The most common instance would be if a spell of unemployment experienced by the primary wage-earner, in addition to immediate economic hardship, leads to a more lasting strain or breakup of the family unit, which strain in turn impairs the youth's academic preparation for college. Morgan, Alwin, and Griffin (1979) found that absence of the father had a negative effect on the academic attitudes and college plans of high school seniors. More generally this model suggests that insofar as the college decision represents a relatively stable outcome of prolonged socialization, a period of increased family financial hardship in itself may have little effect on the basic decision to attend college, although it could increase the tendency to choose a low-cost college program.

In order to investigate these possibilities, two sets of analyses were conducted. The first set examines the pattern of college attendance among recent high school graduates in the youth cohort, including annual graduating classes from 1976 through 1982. These years span the period of the two most recent economic recessions, as indexed by the two unemployment peaks occurring in mid-1975 and again in late 1982. In addition to looking for possible cyclical variation in first-year attendance patterns, these analyses look at trends in college persistence, progression, choice of institution types, and choice of fields of study. This analysis is followed by an inspection of trends in financial aid received by college attenders. Conclusions drawn from these analyses are then tested more formally in a set of equations modelling the determinants of college attendance, financial aid, and college quality.

1976-1982 College Enrollment Trends

First-Year Attendance Approximately one-half, or 48 percent, of the high school graduates from 1976 to 1982 attended college within their first year after graduation (Table 3.1). More importantly, this national rate was constant over the seven years, in spite of the economic recessions at the beginning and end. (The two-percentage-point variation of the annual estimates about the mean estimate is within the limits of sampling error--see Table 3.2A.) Although this initial finding does not necessarily mean a cyclical economy has no impact on youths' college choice decisions, it does indicate that any such effects do not show up directly in gross first-year attendance patterns.

Further analysis of annual rates within sex and ethnic minority groups did not alter this basic finding. While there was significant attendance rate variation between sex and ethnic groups, within each group the attendance

Table 3.1 College Enrollment Rate: Percent of Recent American High School Graduates Currently Enrolled in College, by Years Since High School Graduation and Graduation Year

Year since Graduation	H.S. Graduation Year							
	1976	1977	1978	1979	1980	1981	1982	Total
First	46.9	48.3	49.7	45.5	49.9	47.7	49.3	48.2
Second	--[a]	42.9	48.3	42.7	45.3	46.2	--	45.1
Third	38.3	43.1	38.6	37.8	39.2	--	--	39.4
Fourth	39.0	35.1	34.9	35.2	--	--	--	36.0
Fifth	28.8	27.6	24.0	--	--	--	--	26.8
Sixth	23.3	20.8	--	--	--	--	--	22.0
N (thousands)	3,456	3,452	3,530	3,478	3,517	3,194	3,386	24,013
n	1,280	1,325	1,275	1,180	1,238	1,134	1,054	8,486

[a] Value not available.

Table 3.1A College Enrollment Rate for Black, Hispanic, and White High School Graduates

Year since Graduation	H.S. Graduation Year							
	1976	1977	1978	1979	1980	1981	1982	Total
	Blacks							
First	49.2	44.7	46.5	43.2	45.3	44.6	37.7	44.3
Second	--	39.2	46.2	42.0	41.5	41.6	--	42.1
Third	40.8	37.2	36.1	38.6	34.3	--	--	37.3
Fourth	37.1	30.6	30.3	30.5	--	--	--	32.0
Fifth	29.7	20.2	23.0	--	--	--	--	24.3
Sixth	28.4	14.9	--	--	--	--	--	21.7
N (thousands)	379	375	408	455	458	417	455	2,947
n	256	281	295	317	331	291	275	2,046
	Hispanics							
First	49.2	53.0	48.4	46.5	49.7	48.7	43.4	48.3
Second	--	46.1	47.9	43.4	30.4	44.7	--	42.5
Third	37.4	46.6	36.2	35.6	24.4	--	--	36.0
Fourth	36.6	36.3	27.0	26.5	--	--	--	31.4
Fifth	29.4	36.3	20.7	--	--	--	--	28.8
Sixth	25.3	23.1	--	--	--	--	--	24.1
N (thousands)	125	141	142	140	142	150	159	999
n	113	122	137	141	140	160	139	952
	Whites							
First	46.5	48.5	50.2	45.8	50.6	48.2	51.5	48.8
Second	--	43.2	48.6	42.8	46.6	47.0	--	45.6
Third	38.0	43.7	39.0	37.8	40.6	--	--	39.8
Fourth	39.3	35.6	35.9	36.4	--	--	--	36.8
Fifth	28.7	28.1	24.4	--	--	--	--	27.0
Sixth	22.5	21.4	--	--	--	--	--	22.0
N (thousands)	2,952	2,937	2,980	2,883	2,916	2,627	2,773	20,068
n	911	922	843	722	767	683	640	5,488

Table 3.1B College Enrollment Rate for Male and Female High School Graduates

Year since Graduation	H.S. Graduation Year							
	1976	1977	1978	1979	1930	1981	1982	Total
	Males							
First	44.5	47.6	46.9	41.8	49.6	49.7	48.6	46.9
Second	--	40.4	46.5	42.0	46.0	46.2	--	44.2
Third	40.2	41.0	38.5	34.8	38.6	--	--	38.6
Fourth	41.5	34.2	35.7	32.8	--	--	--	36.1
Fifth	33.7	29.8	25.9	--	--	--	--	29.8
Sixth	28.0	22.7	--	--	--	--	--	25.4
N (thousands)	1,770	1,678	1,748	1,805	1,770	1,591	1,667	12,029
n	633	623	613	584	621	570	537	4,181
	Females							
First	49.4	48.9	52.5	49.5	50.2	45.8	50.0	49.5
Second	--	45.3	50.0	43.4	44.6	46.1	--	45.9
Third	36.3	45.0	38.6	41.1	39.7	--	--	40.2
Fourth	36.3	35.8	34.1	37.8	--	--	--	36.0
Fifth	23.7	25.6	22.2	--	--	--	--	23.8
Sixth	21.2	17.5	--	--	--	--	--	19.3
N (thousands)	1,686	1,774	1,782	1,674	1,747	1,603	1,719	11,985
n	647	702	662	596	617	564	517	4,305

Table 3.2A Analysis of Variance of First-Year College Attendance of 1976-1982 High School Graduates

Source	DF	SS	F	P
Graduation year	6	1.95	1.31	.25
Ethnicity	2	1.79	3.59	.03*
Sex	1	1.50	6.02	.01*
Year x ethnicity	12	2.19	0.73	.72
Year x sex	6	2.74	1.84	.09
Ethnicity x sex	2	2.89	5.80	.01*
Year x ethnicity x sex	12	1.84	0.62	.84
Model total	41	14.91	1.46	.03*
Error	8435	2101.20		
Total	8476	2116.11		

patterns over the seven-year period were constant, within the limits of sampling error (Tables 3.1A, 3.1B). The analysis of variance of first-year college attendance for the 1976-1982 high school graduates summarizes these findings (Table 3.2A). Year of graduation and its interaction with sex and ethnicity are all nonsignificant, but sex and ethnicity and their joint interaction do have significant effects. Female graduates attended slightly more often than male graduates (3 percentage points more), and white and Hispanic graduates attended more often than black graduates (4 percentage points more). Black males had the lowest attendance rates of any graduates, fully 10 points lower than the mean rate (Table 3.2B).

Fourth-Year Attendance Besides affecting the decision to enter college, adverse economic conditions could also reduce the ability to stay in college. Numerous studies have established the importance of financial considerations for college persistence. Sumerskill's (1962) review of 21 college attrition studies found that in 16 studies financial difficulties ranked among the top three reasons for attrition. A review of more recent work based on students' self-reported reasons for dropping out found that financial considerations ranked second, just behind academic difficulties (Pantages and Creedon, 1978).

An upper-limit index of college persistence is the proportion of youth enrolled in college in their fourth year after high school, regardless of their college grade level or timing of initial enrollment. These data are available for the 1976-1979 graduates, corresponding to their academic years of 1979-80 through 1982-83, respectively. Slightly over one-third, or 36 percent, of these high school graduates were in college four years later, a rate which is about 75 percent of the initial first-year rate. Unlike the first-year rates, these fourth-year gross rates do covary with year of

Table 3.2B Proportion of 1976-1982 High School Graduates Attending College in First Year After Graduation, by Graduation Year, Ethnicity, and Sex

Graduation year	Male			Female		
	Black	Hispanic	White	Black	Hispanic	White
	A. Percentage values					
1976	40.1	54.9	44.6	57.0	44.8	48.5
1977	35.5	51.2	48.8	52.0	55.4	48.1
1978	43.5	44.7	47.5	49.4	51.3	52.9
1979	33.1	47.7	42.5	51.8	45.1	49.4
1980	38.5	49.6	51.2	51.4	49.8	50.0
1981	39.4	39.0	51.9	49.5	56.9	44.4
1982	34.6	45.3	51.1	41.2	41.6	51.8
Total	37.8	47.5	48.2	50.3	49.3	49.3
	B. Standard errors of percentages					
1976	6.4	11.4	2.1	5.9	10.0	2.2
1977	6.5	9.4	2.2	5.8	10.8	2.2
1978	5.9	10.6	2.2	5.8	9.5	2.2
1979	5.8	9.8	2.2	5.4	10.2	2.3
1980	5.7	10.3	2.2	5.4	9.7	2.2
1981	5.9	10.1	2.3	5.7	9.3	2.3
1982	5.4	9.5	2.3	5.7	9.4	2.2

n = 8,477.

graduation, in addition to ethnicity and sex. The highest fourth-year attendance occurred in 1979-80, that being for the 1976 graduates (Table 1). Coincidentally or otherwise, in 1978 and 1979 the national unemployment rate fell below 6 percent, marking the low point between the recession highs in 1975 and 1982. Unemployment then rose sharply in 1980, also the year when fourth-year attendance rates fell. This fourth-year attendance drop after 1979 occurred equally for blacks, Hispanics, and whites, but was more evident among males than females (Tables 3.1A and 3.1B). Disregarding year, whites and males overall show a higher persistence rate than blacks, Hispanics, and females. In support of these observations, an analysis of variance of fourth-year attendance, controlling for first-year attendance, indicated significant effects for graduation year, ethnicity, and sex, and for the interaction of graduation year with sex (Tables 3.3A and 3.3B). Graduation year, ethnicity, and sex also have significant interactions with first year attendance, indicating the temporal and grouping effects are stronger for first-year attenders. The persistence rates for the minority of youth who were delayed attenders show little patterned variation (Table 3.3B).

Student Academic Achievement Still another way the economic cycle could affect college attendance patterns is by altering the academic quality of the enrollees. When faced with economic hardship those students who are making normal or better progress toward their degrees should be more inclined to persist in college than those who are experiencing academic difficulties. Furthermore, the increased shortage of private funds during a recession should motivate more youth to complete their coursework on schedule, in order to avoid the extra college costs due to delayed completion. These two tendencies of selecting out the weaker students and speeding up the remainder might jointly work to produce a higher achieving group of college students during

Table 3.3A Analysis of Variance of College Persistence: College Attendance of 1976-1979 High School Graduates in Fourth Year after Graduation

Source	DF	SS	F	P
Attend first year (AFY)	1	328.45	2090.93	.0001*
Graduation year (GY)	3	2.20	4.66	.01*
Ethnicity (E)	2	1.20	3.81	.02*
Sex (S)	1	0.77	4.90	.03*
GY x E	6	0.23	0.24	.96
GY x S	3	1.57	3.30	.02*
E x S	2	0.25	0.80	.45
GY x E x S	6	1.62	1.72	.11
AFY x GY	3	2.98	6.32	.001*
AFY x E	2	1.31	4.17	.02*
AFY x S	1	1.89	12.00	.001*
AFY x GY x E	6	0.63	0.67	.68
AFY x GY x S	3	0.45	0.96	.41
AFY x GY x E x S	8	0.44	0.35	.95
Model Total	47	343.97	7.32	.0001*
Error	5007	786.52		
Total	5054	1130.49		

Table 3.3B Proportion of 1976-1979 High School Graduates Attending College in Fourth Year After Graduation, by First Year Attendance, Graduation Year, Ethnicity, and Sex

Graduation year	Attended first year						Did not attend first year					
	Male			Female			Male			Female		
	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic	White	Black	Hispanic	White
	A. Percentage values											
1976	58.8	57.9	76.4	67.7	67.4	59.2	8.0	9.2	16.0	13.8	12.7	12.4
1977	51.9	63.8	60.1	49.8	47.7	56.1	10.6	19.9	10.2	18.6	4.0	16.9
1978	51.5	46.0	70.5	54.5	44.7	59.5	8.4	7.8	7.4	12.5	11.7	6.5
1979	56.5	53.9	66.9	57.0	49.4	67.5	13.0	5.1	8.9	7.5	4.0	11.7
Total	54.7	55.4	68.5	57.2	52.3	60.6	10.0	10.5	10.6	13.1	8.1	11.[illegible]
	B. Standard errors of percentages											
1976	8.0	12.2	2.5	6.1	11.9	2.5	6.5	13.4	2.3	7.1	10.7	2.5
1977	8.7	10.4	2.5	6.4	11.6	2.5	6.5	10.6	2.5	6.7	12.9	2.4
1978	7.2	12.6	2.5	6.6	10.5	2.4	6.3	11.3	2.5	6.5	10.8	2.5
1979	8.0	11.3	2.6	5.9	12.1	2.6	5.6	10.8	2.3	6.1	11.0	2.5

n = 5,055.

periods of economic hardship.

This possibility was examined by computing the academic progress of college attenders from each high school graduating class, for each of their years elapsed since high school (Table 3.4). Just over one-half, or 57 percent, of the youth who were attending college in their fourth year after graduation were enrolled in their fourth year of college coursework. This percentage was lowest, at 53 percent, for the 1976 graduates, i.e., during the 1979 economic recovery period. This tendency for the academic quality of attenders to vary directly with the years of economic hardship shows itself across each year since graduation that was examined. In the second year after graduation 75 percent of college attenders were doing at least the second year of college coursework. The lowest quality second year class, with 72 percent doing the second year of coursework, were the 1978 graduates, corresponding again to the 1979-80 academic year. Similarly, the lowest quality third-year class were the 1977 graduates, with 57 percent doing third year work compared to the overall third-year average of 64 percent.

First-Year Institutional Choice One reason for the initial finding of no cyclical shift in overall first-year attendance rates may be that youth were able to adjust to changing economic circumstances more by altering the institutional quality of the college they attended than by foregoing college altogether. Three ways to minimize the immediate direct costs of college are to enroll in a two-year community college degree program, to attend a college located in one's home state rather than in another state, and to take a part-time course load instead of a full courseload. Thus, arranged in terms of costs, one's options range from enrolling part-time in a two-year, in-state institution to enrolling full-time in a four-year, out-of-state institution.

Within the 1978-1982 time period for which these institutional data are

Table 3.4 College Progression Rate: Percentage of Current College Enrollees Whose Highest Year of College Attended Equals or Exceeds the Years Elapsed Since High School Graduation, by Years Since High School Graduation and Graduation Year

Year Since Graduation	H.S. Graduation Year						
	1976	1977	1978	1979	1980	1981	Total
Second	--[a]	80.2 (486)[b]	71.7 (537)	73.5 (473)	74.6 (509)	73.8 (476)	74.7 (2,481)
Third	64.5 (451)	56.6 (488)	67.6 (428)	67.7 (413)	65.8 (430)	--	64.3 (2,210)
Fourth	52.6 (460)	55.6 (411)	60.7 (368)	58.0 (358)	--	--	56.6 (1,597)

[a] Value not available.

[b] Sample size (n) used in cell percentage base. Corresponding population estimate (N) can be derived from Table 1.

available, the choice of these two extreme options does vary in the expected direction (Table 3.5). The proportion of first-year college attenders who chose the first, low-cost, option doubled from 1979 to 1982. The proportion of part-time in-state two-year college attenders reached a low of 4.3 percent in 1979 and rose steadily to 8.5 percent in 1982. Conversely, the proportion choosing the high-cost option decreased by one-third over the same period. Full-time out-of-state, four-year college students reached a high in 1979 of 13.6 percent of all first-year attenders and dropped steadily to 9.3 percent in 1982. The total proportion of youth choosing four-year over two-year institutions peaked a year later, in 1980, at 65 percent and then dropped by 1982 to 60 percent.

Institutional Persistence and Transfers Of interest next is whether the apparent tendency to select a less expensive, lower quality form of higher education during economic hardship is only a temporary, transitional step by youth, or whether it is instead a relatively permanent, immutable educational choice. If youth show a strong tendency to upgrade or otherwise modify their initial educational choices, then the long-term consequences of the college quality-business cycle relationship may be relatively minor. If, on the other hand, one's initial educational choice tends to lock one into a well-bounded lower educational track, the impact of the business cycle on those initial choices is more serious.

This issue was analyzed by cross-classifying the institutional enrollment type of youth in their second and fourth years after high school graduation by their initial, first-year enrollment type (Tables 3.6A and 3.6B). These data were available for the 1978 and 1979 high school graduating classes

Table 3.5 Distribution of First Year College Students by Institutional Enrollment Type, Location, and Enrollment Status, by High School Graduation Year

Enrollment Type	H.S. Graduation Year 1978	1979	1980	1981	1982	Total
Two-Year						
In-State						
Part-time	6.8	4.3	5.9	6.0	8.5	6.4
Full-time	28.7	26.5	23.1	26.8	26.9	26.4
Out-of-State						
Part-time	0.3	0.5	0.6	1.7	0.0	0.6
Full-time	1.9	2.0	2.5	1.3	1.4	1.8
Subtotal	37.7	33.3	32.1	35.8	36.8	35.2
Four-Year						
In-State						
Part-time	3.1	1.3	2.7	3.4	2.3	2.6
Full-time	44.1	49.0	48.8	47.3	48.8	47.5
Out-of-State						
Part-time	0.2	0.0	0.6	0.4	0.1	0.3
Full-time	12.8	13.6	13.2	11.7	9.3	12.1
Subtotal	60.2	63.9	65.3	62.8	60.5	62.5
Type Unclassified	2.2	2.9	2.6	1.4	2.7	2.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
N (thousands)	1,665	1,422	1,644	1,434	1,645	7,810
n	497	447	542	471	445	2,402

Table 3.6A College Enrollment Persistence of 1978 and 1979 High School Graduates: Institutional Enrollment Distribution Two Years After H.S. Graduation by Distribution in First Year After Graduation[a]

	College Enrollment Type in First Year[a]				
		Two Year		Four Year	
Second year enrollment Type	Not Enrolled	In-State, Part-Time	In-State, Full-Time	In-State, Full-Time	Out-of-State, Full-Time
Not Enrolled	89.2%	61.3%	25.1%	14.0%	5.2%
Two-Year					
In-State					
Part-time	1.9	23.2	11.5	0.1	1.4
Full-time	3.1	11.0	49.8	1.5	0.8
Out-of-State					
Part-time	0.6	0.0	0.8	0.0	1.0
Full-time	0.5	0.0	0.6	0.1	4.4
Subtotal	6.1	34.2	62.7	1.7	7.6
Four-Year					
In-State					
Part-time	1.0	0.0	0.0	2.6	2.2
Full-time	2.4	4.6	9.2	79.6	19.6
Out-of-State					
Part-time	0.2	0.0	0.0	0.0	0.3
Full-time	0.6	0.0	2.9	1.9	65.2
Subtotal	4.2	4.6	12.1	84.1	87.3
Type Unclassified	0.5	0.0	0.2	0.1	0.0
Total	100.0	100.0	100.0	100.0	100.0
N (thousands)	3,934	174	854	1,430	406
n	1,517	55	276	419	110

[a] Excluded from this table are 84 graduates whose first year status was in a category type too small to percentage: 2-year, out-of-state, part-time (8) and full-time (19) students, 4-year, part-time, in-state (19) and out-of-state (8) students, and unclassified college students (30).

Table 3.6B College Enrollment Persistence of 1978 and 1979 High School Graduates: Institutional Enrollment Distribution Four Years after H.S. Graduation by Distribution in First Year after Graduation[a]

	College Enrollment Type in First Year[a]				
		Two Year		Four Year	
Fourth year enrollment Type	Not Enrolled	In-State, Part-Time	In-State, Full-Time	In-State, Full-Time	Out-of-State, Full-Time
Not enrolled	90.6%	73.0%	50.9%	25.0%	22.8%
Two-Year					
In-State					
Part-time	2.1	9.7	6.1	1.1	0.4
Full-time	1.9	8.7	8.9	2.2	1.4
Out-of-State					
Part-time	0.5	0.0	0.6	0.0	0.0
Full-time	0.3	0.0	0.0	0.0	1.0
Subtotal	4.8	18.4	15.6	3.3	2.8
Four-Year					
In-State					
Part-time	0.7	0.0	3.2	4.2	1.7
Full-time	2.1	5.4	23.1	64.6	14.5
Out-of-State					
Part-time	0.5	0.0	0.0	0.0	3.6
Full-time	0.5	0.0	4.9	1.6	51.4
Subtotal	3.8	5.4	31.2	70.4	71.2
Type Unclassified	.9	3.2	2.3	1.4	3.3
Total	100.0	100.0	100.0	100.0	100.0
N (thousands)	3,934	174	854	1,430	406
n	1,517	55	276	419	110

[a] See Table 4A, note a.

only.[2] The five first-year enrollment types arranged in order of quality were as follows: (1) those not enrolled; (2) two-year in-state part-timers; (3) two-year in-state full-timers; (4) four-year in-state full-timers; and (5) four-year out-of-state full-timers.

The part-time two-year students show only a weak tendency to upgrade initial institutional choices. In fact, only 39 percent of the part-time two-year students are still enrolled in the next year. Of these, over half, 23 percent, remain part-time students, with 11 percent upgrading to full-time status and 5 percent transferring to a four-year college. This proportion of transfers is only slightly above the 4 percent four-year college enrollment rate for youth who were not enrolled at all in their first year after graduation (Table 3.6A, column one).

For full-time two-year students the second year persistence rate is considerably higher, at 75 percent, although this rate too is well below the 86 percent persistence rate for four-year in-state students and the 95 percent rate for four-year out-of-state students. Of these 75 percent, 63 percent remain in two-year institutions, including 12 percent who become part-time students, and the other 12 percent transfer to four-year institutions. Thus the odds of a full-time two-year student transferring to a four-year college after one year are about one in eight.

Over a period of three years, i.e., by the fourth year after graduation, the odds of a full-time two-year student having transferred to a four-year school have increased to just over 3 in 10 (Table 3.6B). These 31 percent of youth who transfer represent the proportion for whom the two-year degree program is only preliminary to a four-year program. Another 51 percent are no longer enrolled, and the remaining 16 percent (2 percent are unclassified) are still in a two-year program. Some of these remaining students also will eventually transfer to a four-year college, although one would expect the odds for them to be lower.

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[2] This analysis therefore assumes the form and rate of institution-switching after the initial choice is invariant across years. The future availability of additional waves of observations for later graduating classes will permit a test of this assumption.

These numbers indicate that substantial numbers of two-year college youth can and do choose to enter a four-year college program, even during conditions of economic hardship. A crucial consideration, however, is that an equivalent proportion of these students drop out of college altogether after one year. Thus in terms of persistence, this two-step pattern of higher education is considerably more risky than that for youth who enter a four-year institution directly.

Among youth in four-year colleges, a small but important tendency was for students attending out-of-state to transfer to in-state after one year. Fully 20 percent of students attending out-of-state institutions transferred to a school inside their home state, compared to only 2 percent of in-state students who transferred out. While one important consequence of such transfers is reduced college costs for youth, in the absence of more specific data one cannot say how much economic rather than academic or personal considerations actually affected their decision.

Major Fields of College Study An area where business cycle effects are least plausible is the selection by college youth of their major fields of study. For the most part the tuition and other monetary costs of an undergraduate education do not vary according to one's field of study, and therefore the choice of major should be relatively independent of immediate financial considerations. Any observed trends should instead be due primarily to the perception of changing employment opportunities upon graduation. Tables 3.7A and 3.7B present the undergraduate major fields of study of the

Table 3.7A Major Field of Study of Male College Students in First and Third Years after H.S. Graduation, by Graduation Year

	H.S. Graduation Year							
Field of Study	1976	1977	1978	1979	1980	1981	1982	Total
	A. First Year after High School Graduation							
Business	--	--	20.7	23.3	22.6	18.5	20.5	21.1
Engineering	--	--	11.0	20.6	16.3	19.4	15.6	16.4
Computer Sci.	--	--	3.7	4.6	3.4	8.6	9.6	6.0
Health Prof.	--	--	3.4	1.2	2.2	3.4	3.6	2.8
Education	--	--	6.9	3.5	5.6	6.0	4.4	5.3
Phys. Sci.	--	--	4.4	3.2	4.9	4.6	4.5	4.3
Bio. Sci.	--	--	11.9	6.0	3.1	3.7	2.3	5.3
Soc. Sci.	--	--	5.2	6.1	5.9	5.2	5.3	5.5
Arts & Letters	--	--	6.4	5.0	5.2	6.3	6.4	5.9
Others[a]	--	--	26.4	26.5	30.9	24.3	27.9	27.3
Total			100.0	100.0	100.0	100.0	100.0	100.0
N (thousands)			764	684	818	734	797	3,798
n			221	193	261	233	218	1,126
	B. Third Year after H.S. Graduation							
Business	31.1	26.5	26.1	25.0	23.9	--	--	26.6
Engineering	10.2	13.6	14.5	17.7	16.6	--	--	14.4
Computer Sci.	3.4	3.0	5.0	11.7	9.0	--	--	6.4
Health Prof.	0.7	2.4	2.3	1.8	2.6	--	--	2.0
Education	5.9	2.7	8.9	2.0	6.6	--	--	5.4
Phys. Sci.	3.7	6.9	2.7	0.9	6.2	--	--	4.0
Bio. Sci.	6.8	9.6	5.9	3.1	1.6	--	--	5.3
Soc. Sci.	8.2	13.2	8.1	13.3	4.5	--	--	9.3
Arts & Letters	6.1	3.0	2.6	9.1	9.7	--	--	6.2
Others[a]	23.9	19.0	23.9	15.3	19.2	--	--	20.4
Total	100.0	100.0	100.0	100.0	100.0			100.0
N (thousands)	696	565	646	607	667			3,182
n	197	178	185	180	200			940

[a] Others includes, in order of frequency, public services, communications, interdisciplinary studies, agriculture, architecture, home economics, law, theology, military science, library science.

Table 3.7B Major Field of Study of Female College Students in First and Third Years after H.S. Graduation, by Graduation Year

	H.S. Graduation Year							
Field of Study	1976	1977	1978	1979	1980	1981	1982	Total
	A. First Year after High School Graduation							
Business	--	--	26.7	31.3	22.3	26.9	24.7	26.3
Engineering	--	--	2.1	2.2	1.6	2.5	5.2	2.7
Computer Sci.	--	--	2.8	2.9	6.3	7.4	8.8	5.6
Health Prof.	--	--	12.5	7.4	11.9	11.3	18.7	12.5
Education	--	--	9.4	11.2	13.4	6.1	6.9	9.4
Phys. Sci.	--	--	2.6	2.8	0.5	0.8	2.9	2.0
Bio. Sci.	--	--	5.8	3.2	6.4	4.1	2.2	4.4
Soc. Sci.	--	--	11.8	11.0	7.0	7.7	3.9	8.2
Arts & Letters	--	--	8.2	5.9	7.6	7.8	4.6	6.8
Others[a]	--	--	18.2	22.1	23.2	25.5	22.1	22.1
Total			100.0	100.0	100.0	100.0	100.0	100.0
N (thousands)			830	753	806	696	848	3933
n			255	258	277	238	227	1255
	B. Third Year after H.S. Graduation							
Business	17.1	22.5	27.9	27.3	24.1	--	--	23.8
Engineering	1.7	2.4	2.7	2.0	1.2	--	--	2.0
Computer Sci.	2.6	4.0	4.7	3.9	4.1	--	--	3.9
Health Prof.	12.3	18.2	11.7	13.5	15.7	--	--	14.4
Education	19.8	15.4	10.9	13.6	17.6	--	--	15.5
Phys. Sci.	4.7	3.3	2.2	4.2	1.5	--	--	3.2
Bio. Sci.	3.0	1.8	4.8	4.4	5.1	--	--	3.8
Soc. Sci.	15.9	8.3	10.0	6.5	11.0	--	--	10.2
Arts & Letters	10.7	6.3	9.4	10.1	3.3	--	--	7.8
Others[a]	12.2	17.9	15.6	14.4	16.5	--	--	15.4
Total	100.0	100.0	100.0	100.0	100.0			100.0
N (thousands)	603	668	611	655	670			3206
n	239	229	191	209	213			1081

[a] Others includes, in order of frequency, public services, communications, interdisciplinary studies, agriculture, architecture, home economics, law, theology, military science, library science.

youth, collapsed into ten main categories. These include the five professional and technical fields of business, engineering, computer science, health professions, and education, four arts and science divisions of physical science, biological science, social science, and arts and letters, and a residual category labelled "other." Collected for current attenders in each of the 1979 through 1983 surveys, data for first-year majors are given for each of the 1978 to 1982 high school graduating classes, while majors in the third year after graduation are given for each of the 1976 to 1980 graduating classes.[3] In view of the continuing prevalence of sex differences in certain fields of study, these distributions are reported separately for males and females.

For male youth business and engineering are consistently the first and second most chosen fields each year in both the first and third years of college. There is, however, a noticeable drop in third-year business majors, from a peak of 31 percent in academic year 1978 to 24 percent in 1982, and a corollary increase in the proportion of engineering majors, from 10 percent to 17 percent. There is also a steady increase in computer science majors that holds at both the first and third years, increasing at the first-year level from 4 percent of the students to just under 10 percent, and from 3 to 9 percent of the third-year students. For males, then, there appears to be a mild shift from business to technology fields, consistent with the new publicity given to "high tech" occupations.

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[3] One inherent difference in the first and third year distributions is that the greater proportion of two-year community college students in the first year increases for that year the proportion of vocational majors, most of which are classified into the professional-technical categories. The third-year distribution, except for the fact it omits most terminal two-year degree students, ought to give a more accurate distribution of the final fields of study of youth. Approximately half the youth do change their major from their first to third year of study (Appendix Table 3.A.1). About as many youth transfer into a field as transfer out, however, so that the overall distribution of early and later majors is quite similar. Consequently, trends in majors observed for the third year of college tend to be the same for the first. The exceptions are any which might be differentially applicable to four-year and community college students.

A major trend for women, present to a small degree also for men, is a move away from the arts and science fields into professional and technical areas. Over the five years examined the proportion in the four arts and science categories dropped 14 percentage points for first-year women and 13 points for third-year women. The similar values for men are a drop of 9 points in the total percentage of first-year arts and science majors and 3 points in third-year majors. Women increasingly, and in fact rather dramatically, are selecting professional fields of study that will prepare them for career employment opportunities. While the worsening economy over this time period certainly could have reinforced this growing vocational emphasis, the primary origin of this trend lies in the broader, long-term societal change in women's roles.

For women business is consistently the first choice in both the first and third years, being chosen by one-quarter of women students. Unlike for men, there is no indication of any decline from 1978 to 1982 in the proportion of third-year students in this field. Engineering, however, remains relatively unchosen by women, averaging 3 percent of first year women and 2 percent of third year. By contrast, women, at least in the first year, have shown an increasing tendency to major in computer science. The proportion increased from 3 percent of first-year majors in 1978 to 9 percent in 1982. For third-year women the proportion remains stable at 4 percent.[4] Women also continue to enter heavily into traditional women's service sector fields. The second most-chosen field for women was the health profession, consisting primarily of nursing and medical technology. This proportion averages 13 and 14 percent, respectively, for first- and third-year women students. A close third is education, being chosen by 9 percent of first-year women and 16 percent of third-year women.

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[4] This growth in the first year only reflects the fact that, for women, computer science training takes place primarily in two-year applications programs and less in the more mathematically-oriented four-year programs.

To summarize the analysis presented so far, the guiding theoretical expectation has been that youth and their parents would make educational choices that reflect cost-cutting responses to increased financial hardship during periods of economic recession. Three trends observed in recent college enrollment behavior provided preliminary support for this expectation. These were the declines in rates of college persistence and in the institutional quality of enrollment choices, and the corollary increase in the levels of academic progress of students.

A somewhat competing interpretation of these trends is that they represent an early manifestation of responsive supply behavior. From this perspective the downward trends in institutional quality may reflect initial adjustments of youths' educational backgrounds in preparation for the loose job market they expect to enter. An increasing proportion of youth may decide the practical skill-training offered in a two-year degree program will better guarantee employment, even if at lower initial earnings levels, than will a four-year degree program that provides no specific job training. In the absence of more specific data, the possibility that these observed trends are manifestations in part of such responsive supply decision-making cannot be ruled out. Such a strategy would be relatively unique, however, in the history of the American labor market. Traditionally periods of high unemployment have been used by employers to elevate the educational qualifications of their job positions, with the lower qualified workers bumped from their positions (Rawlins and Ulman, 1974).

It is more plausible that responsive supply behavior of youth is guided by information about long-term trends in the occupational structure rather than short-term cyclical employment trends. In particular, much of the vocational guidance material for today's youth espouses the future job market in the professional service sector of the economy and in the so-called "high-tech" fields frequently symbolized by computer usage. The finding of a growing technological emphasis in the fields of study of men and an increased professional emphasis among women tend to confirm this influence.

1978-1982 Financial Aid Trends

If economic trends affect college enrollment behavior, a crucial intervening policy variable to consider is the degree of availability of financial aid. During periods of economic recession one might expect the various state, federal and private sources of financial aid to respond to the increased need and raise the pool of available funds. But if those funds are themselves diminished by the economic recession, their lowered availability would actually heighten the financial constraints for prospective students. To date, only a few studies of the impact of financial aid on college enrollments have attempted to model the varying administrative formulas for dispensing aid or its potentially differential impact on different groups of youth (Hoenack, 1971; Jackson, 1978; Manski and Wise, 1983). No studies have sought to measure how aid receipt may vary over time in relation to the business cycle. Such temporal variations in the availability of financial aid could be a significant factor in altering both the amount and institutional distribution of college attendance.

A substantial proportion of the youth did require financial aid in addition to their family and personal funds in order to attend college. Over the 1978-1982 time period, 54 percent of the first year attenders qualified for and received aid (Table 3.8). This includes 41 percent who received grants and 32 percent who received loans. The proportion receiving both grants and loans was 19 percent. The mean value of these first-year grants was 1,324 current dollars.[5] This amount is substantial when multiplied by the total number of recipients, but for the average individual recipient it is well below actual college costs and also well below the amount raised by the youth through personal earnings. The latter figure, calculated over the calendar year corresponding to the last half of the high school senior year and the first half of the college freshman year, was 2,266 current dollars. This mean value applies to 90 percent of first-year attenders who were employed within that time interval. How much of their earnings were applied directly to college expenses varied, of course, depending on the financial situation of the youths' families; this amount is expected to be lower, on average, for youth from families affected by a business recession.

The dependence on financial aid in order to attend college is magnified with the quality of a youth's institutional choice. Fully 70 percent of youth who attended the more expensive out-of-state four-year colleges applied for and received aid, compared with 64 percent of in-state four-year attenders, 43

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[5] Loan amount information is currently unavailable from these data. The survey asked each year for the total dollar value of any educational grants during the previous calendar year, without differentiating among the sources. The largest single source was the Federal Pell grants program, providing in 1980 up to 1,800 dollars, depending on family income and college costs, for 2.7 million disadvantaged students. After 1981 the ceiling on these grants was reduced to 1,670 dollars, and the eligibility schedule was raised in order to eliminate relatively small grants for an estimated 250,000 students with family incomes between $16,000 and $25,000 (Fiske, 1981, 1982).

Table 3.8 Financial Aid and Employment of All Youth in First Year of College Who Were 1978-1982 High School Graduates, by College Enrollment Type

Proportion of First Year Students with:	College Enrollment Type				
	2 Year College (In-State)		4 Year College (Full-time)		
	Part-time	Full-time	In-State	Out-of-State	Total[a]
Financial Aid					
Loans	5.9%	17.7%	38.9%	53.0%	31.8%
Grants	9.3	34.7	49.9	47.2	41.2
Loans & Grants	2.5	9.7	25.0	30.6	19.1
Total with Aid	12.7	42.7	63.8	69.6	53.9
Employment[b]	97.8	89.0	88.8	93.1	90.0
Mean Value[c] of					
Grants	502	737	1337	2328	1324
Earnings	3849	2531	1970	1611	2266
n	157	677	1,096	258	2,402

[a] Includes 214 youth enrolled in college but not in one of the four main enrollment categories to the left.

[b] Employed one week or more in civilian labor force, during calendar year corresponding to first half of academic year.

[c] Dollars, unadjusted for inflation. Youth with zero values are excluded from computation of means.

percent of full-time two-year attenders, and only 13 percent of part-time two-year attenders. The average amount of aid considered necessary to attend each type of institution varied similarly, the mean grant size ranging from 502 current dollars for part-time attendance at a two-year college to 2,328 dollars for an out-of-state four-year college (Table 3.8).

Table 3.9 reports for all youth who were between the ages of 18-20 in calendar years 1978, 1980, and 1982 the proportion who received educational grants, the average size of the grants, and the estimated aggregate value of those grants to all youth in this age group. For the sake of comparison, similar calendar year values are reported for 11 other sources of youth income, including those from earnings, assets, and various forms of transfer payments. The picture that emerges is one of a relatively stable proportion of youth receiving grants over the five-year period but in declining real dollar amounts. The proportion of grant recipients changes less than one percentage point, ranging between 14 percent in 1978 and 15 percent in 1982.[6] The size of the average grant increased from 1,225 current dollars in 1978 to 1,369 dollars in 1980 and 1,509 dollars in 1982. That represents an average annual increase of 5.9 percent between 1978 and 1980, and 4.9 percent between 1980 and 1982. These increases were below the general rate of inflation, and more particularly, well below college costs during the same period. At public institutions the average annual increase in college costs (tuition, room, and board) grew steadily from 7.7 percent between 1978 and 1979 to 11.8 percent between 1980 and 1981 (National Center for Education Statistics, 1982: 141). At private institutions, costs increased even more

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[6] When the youth population is restricted to first-year attenders at in-state four-year institutions, the corresponding values for the proportion with grants was 47 percent in 1978, 49 percent in 1980, and 46 percent in 1982.

Table 3.9 Sources of Income for the Population of American Youth 18-20 in 1978, 1980, and 1982

Income source	Percentage of youth population receiving the income			Mean value to recipients (in dollars)			Aggregate value to cohort (in millions of dollars)			Aggregate source total as percentage of aggregate cohort total		
Year:	1978	1980	1982	1978	1980	1982	1978	1980	1982	1978	1980	1982
N (millions):	12.9	12.7	12.9									
A. Earnings:												
Civilian	83.0	83.8	81.6	4278	4714	4667	45,780.9	50,301.6	48.048.5	81.0	78.3	76.3
Military	4.6	5.6	5.5	4766	4704	5776	2,832.5	3,375.3	4,119.0	5.0	5.3	6.4
Total							49.613.4	53,676.9	53,167.5	86.0	83.6	82.7
B. Asset income:												
Farm & business	2.8	3.0	2.8	2288	2704	2596	814.1	1,020.0	941.0	1.4	1.6	1.5
Other	26.4	29.5	32.5	543	626	488	1,849.9	2,354.9	2,041.6	3.3	3.7	3.2
Total							2,664.0	3,374.9	2,982.6	4.7	5.3	4.7
C. Transfer payment income:												
Interhousehold allowances	5.6	4.3	5.4	1590	1719	2074	1,140.9	933.2	1,432.8	2.0	1.5	2.2
Alimony	0.7	0.6	0.8	666	794	1320	59.7	56.7	136.7	0.1	0.1	0.2
Educ. grants	14.4	15.0	15.2	1225	1369	1509	2,271.8	2,620.3	2,955.8	4.0	4.1	4.6
Unemploy. insurance	4.1	6.3	5.7	682	1349	1810	359.5	1,077.0	1,318.6	0.6	1.7	2.1
Food stamps	2.9	5.0	5.4	465	687	889	173.5	441.2	617.8	0.3	0.7	1.0
Disability and veteran benefits	2.9[a]	2.5	2.1	744	1289	945	272.8	413.0	257.8	0.5	0.6	0.4
AFDC	2.2	2.5	2.1	1856	3121	3522	535.7	984.4	966.8	0.9	1.5	1.5
Other public assist.	2.2	2.8	2.1	1418	1764	1740	402.0	629.7	475.1	0.7	1.0	0.7
Total							5,215.9	7,155.5	8,161.4	9.2	11.1	12.7
Grand total							56,493.3	64,207.3	64,311.5	100.0	100.0	100.0

[a] Estimated from 1979 value.

rapidly, from a 9.6 percent annual increase between 1978 and 1979 to a 13.2 percent increase between 1980 and 1981.

One way for youth to offset this growing gap between college costs on the one hand and personal funds and grants on the other is to make greater use of student loan funds. Apparently they did use more loans. The estimated proportion of first-year attenders at four-year in-state institutions who had student loans jumped from 26 percent in calendar year 1978 to 41 percent in 1980 and held steady at that level in 1982. This increased use was facilitated no doubt by a major relaxation after 1978 in federal eligibility for such funds.[7]

Not all youth in need, however, are willing to assume a student loan burden to cover these rising college costs. Such reluctance may be particularly prevalent among youth uncertain of their future post-college earnings potential--academically marginal youth for whom a college education is a relatively high-risk venture, and disadvantaged youth who have few role models in college-level occupations. These are youth at the margin, for whom current trends in the labor market may be an important factor in their decisions to attend college (Jackson, 1978).

Looking briefly at these trends, Table 3.9 suggests that, if anything, the youth labor market was becoming an increasingly unattractive alternative, particularly during the period of worsening economic recession between 1980 and 1982. The major exception was the military sector, where youth showed a 22.8 percent jump in average earnings between 1980 and 1982, after no increase at all between 1978 and 1980. By contrast, youths' civilian earnings increased 10.2 percent between 1978 and 1980 and not at all between 1980 and 1982. Furthermore, a growing minority of youth were becoming recipients of public assistance. Over the 1980-1982 period 6 percent of all youth between 18 and 20 were receiving unemployment insurance benefits and 4 percent were getting food stamps; both these proportions were 2 percentage points higher than in 1978. A rapid increase in the average size of these transfer payments reflects the growing importance of this assistance to this expanding minority of youth. Between 1978 and 1980 the value of youths' unemployment benefits increased at an annual rate of 27.6 percent, and food stamps increased 21.6 percent. Between 1980 and 1982 the annual rates of increase continued at 15.8 percent and 13.8 percent, respectively. The net result was a tripling in 5 years of the average unemployment benefit and a doubling of the average food stamp benefit.

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[7] The 1978 Middle Income Student Assistance Act of Congress made Guaranteed Student Loans of up to 2,500 dollars at deferred 9 percent interest available to all youth. Formerly they were restricted to youth from families with under 25,000 dollars in income. Between 1978 and 1981 the number of students with these loans increased from 2 million to 3.6 million and the cost of federal subsidies of the program increased six-fold, reaching 2.6 billion dollars (Fiske, 1981, 1982). Congress reimposed income restrictions in 1981, requiring students from families with incomes over 30,000 dollars to pass a needs test.

Apparently, however, this five-year growth in safety net payments to impoverished youth was not matched with a similar rise in educational benefits. The available pool of grant funds has instead remained relatively constant, requiring students to find other aid besides grants to make up the growing shortfall between college costs and available personal funds. Examination of the various alternatives leads to the conclusion that youth have come to rely increasingly on student loans as a means of meeting their college expenses. The eligibility and willingness to use student loans should thus be a key variable mediating the hypothesized relationship between the business cycle and youths' college enrollment behavior.

Business Cycle Effects

Our analysis has so far assumed that any variation in the college enrollment propensities of American youth that covaried with temporal shifts in the national economy must be causally related to the latter. Now we drop this assumption, and attempt to measure directly the size of the business cycle effect net of other determinants of college enrollment behavior, including other possible time-related factors.

Figure 3.1 presents the hypothesized theoretical model of the relationship between the business cycle and college enrollment. Its structure conforms to the standard educational attainment model (Sewell and Hauser, 1975) with the addition of business cycle, financial aid, and several control variables. According to this basic model youth's achievement of higher education depends on family socioeconomic background and two sets of mediating variables, high school academic performance and the social psychological development represented by academic plans and interpersonal influences during adolescence. Financial aid enters the causal model as an additional mediating variable, and the business cycle effect is hypothesized to be causally prior to each of these variables.

The overall negative effect of an economic contraction on educational attainment is hypothesized to operate directly on the outcome variables of attendance and enrollment quality and indirectly through its effect on the other variables in the causal system. These possible indirect effects include lowering attainment by reducing the available financial aid and by weakening the economic position of families. These two indirect effects could in turn be partially offset by the additional indirect effect of economically-weakened families making increased use of available financial aid. The exact nature of the hypothesized negative direct effect of an economic contraction net of

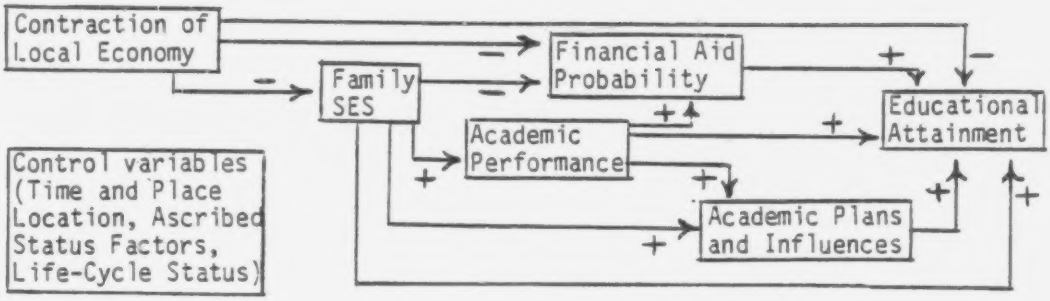
Contraction of Local Economy
Financial Aid Probability
Family SES
Educational Attainment
Academic Performance
Academic Plans and Influences
Control variables (Time and Place Location, Ascribed Status Factors, Life-Cycle Status)
−
−
−
+
−
+
+
+
+
+
+
+

Figure 3.1 A Theoretical Model of the Business Cycle-College Enrollment Behavior Relationship

these indirect effects cannot be specified, but could include an increase in the general state of caution and psychological malaise that reduces spending and investment behavior during economic contractions.

Measuring Business Cycles. Alternating contraction and expansion of economic activity has occurred throughout American history. In a classic work on the subject, Hansen (1941) detected 17 major cycles between 1795 and 1937, each lasting an average duration of 8.35 years. Recent history confirms this pattern. The December, 1982 civilian unemployment rate of 10.8 percent, the highest since the Great Depression, marked the bottom point of the contraction that started in 1979. It came 7 1/2 years after the last unemployment rate peak, 9.0 percent in May 1975.

The most commonly used single indicator of the business cycle has been the national unemployment rate. Business cycle analysts examine a large number of indicators, however, with special emphasis on identifying leading indicators that can predict any upcoming economic swing. These include measures of the interrelated factors of industrial production, prices, wages, interest rates, and profits. The measure used in this analysis is the unemployment rate in the spring of the youths' senior year of high school, specific to the metropolitan area (SMSA) where the youth resided. For the small proportion of youth not residing in an SMSA, the rate used was the average for all non-SMSA areas of the youth's state. Use of area rather than the national unemployment rate allows for possible time-lag differences in the local experience of an economic downswing, as well as for differences in severity. Areas heavily involved in durable goods manufacturing, for example, are likely to undergo a downswing earlier and more intensely than areas primarily producing consumer goods.

Each annual area rate was transformed to a deviation score, subtracting the area rate averaged over the 1980-1982 period from the rate in the youth's particular graduation year. These last analyses are restricted to youth who graduated in either 1980, 1981, or 1982. Use of deviation scores better assure that the local measure of cyclic change would be independent of more long-standing area differences in employment rates. Conceptually, the area unemployment deviation score is intended to be a general index of contraction of the local economy, even though the unemployment rate in itself does have a more obvious relationship to the economic stability of families than do other possible cycle indicators. It is well to keep in mind, however, that increased likelihood of unemployment is only one of the ways an economic downswing can have an adverse impact on the economic well-being of families.

Other Explanatory Variables. The business cycle effect was estimated net of 21 other explanatory variables. These include six family socioeconomic variables, four academic performance variables, three plans and influence variables, and nine control variables that measured location in time and place and minority and life-cycle status. Their means and standard deviations are given in Table 3.10. Fifteen of the variables are measured using one or more dummy variables; the value in parentheses is the referent category. For six variables a missing data (NA) dummy variable is also included to control for possible missing data bias.

The socioeconomic variables are (1) total family income during the calendar year preceding the youth's graduation (corresponding to what would be reported on the need statements of financial aid applications), (2) number of siblings, (3, 4) mother's and father's highest year of education, and (5, 6) mother's and father's occupational status when the youth was 14. Occupation is coded white collar or blue collar versus the referent category of having no employed parent. For mothers this referent category primarily signifies

Table 3.10 Means and Standard Deviations of Variables in the Reduced-Form Equations for College Attendance, Financial Aid, and College Quality, for 1980-82 High School Graduates

	Universe			
	H.S. graduates (n = 3,402)		College attenders (n = 1,414)	
Variable	$\bar{X}$	S.D.	$\bar{X}$	S.D.
Grad. year (1980)				
1981	.317	.466	.307	.485
1982	.333	.471	.345	.500
Male (female)	.499	.500	.500	.525
Ethnicity (wh.)				
Black	.132	.339	.108	.326
Hispanic	.045	.207	.042	.211
Region (Pacific)				
Northeast	.200	.400	.219	.435
South	.327	.469	.325	.492
N. Cen. & Mt.	.356	.479	.343	.499
Urban (rural)	.758	.428	.793	.426
Area unemp. rise	.050	1.73	-.011	1.81
Weeks employed	25.21	19.98	25.84	20.65
NA	.025	.157	.009	.101
Married	.032	.177	-	-
Children	.042	.201	-	-
Fam. income (0-10)				
10-20	.183	.387	.152	.377
20-30	.189	.392	.184	.407
30+	.294	.456	.386	.512
NA	.227	.419	.208	.426
Fa. educ. (0-11)				
12	.354	.478	.316	.489
13-15	.110	.312	.127	.349
16	.110	.313	.184	.407
17-20	.073	.260	.138	.363
NA	.091	.287	.062	.253
Mo. educ. (0-11)				
12	.469	.499	.478	.525
13-15	.106	.308	.156	.381
16	.081	.273	.142	.367
17-20	.027	.163	.049	.227
NA	.045	.208	.032	.184
Fa. occ. (no emp.)				
WC	.322	.467	.467	.524
BC	.443	.497	.327	.493
Mo. occ. (no emp.)				
WC	.305	.460	.397	.514
BC	.251	.433	.176	.400
Sibs., no.	3.10	2.16	2.73	2.02
H.S. curr. (gen.)				
Voc., comm.	.129	.335	.071	.270
Coll. prep.	.341	.474	.518	.525
H.S. rank (0-25)				
25-50	.152	.359	.138	.363
50-75	.171	.376	.204	.424
75-99	.186	.389	.303	.483
NA	.355	.479	.269	.466
Sector (pub.)				
Cath.	.037	.188	.057	.243
Other priv.	.027	.163	.035	.193
AFQT	71.41	17.76	78.46	16.44
NA	.029	.169	.014	.122
Educ. exp.	14.22	2.12	15.434	1.849
Occ. exp.	56.52	22.12	63.63	20.44
Sign. other infl.	3.02	.86	3.28	.84

homemaker status, and for fathers primarily absentee status, with unemployment only a secondary proportion in both cases. The life-cycle variables, measuring movement into adult family and labor force roles, as of the spring of the senior year: these tell whether the youth was (1) married, (2) had any children, and (3) the number of weeks worked during the calendar year preceding graduation.

The academic performance variables are (1) high school curriculum (either vocational and commercial or college preparatory versus general), (2) high school class rank (quartiles, with low the referent category), (3) school sector (Catholic or other private versus public), and (4) AFQT standardized cognitive achievement score, assessed for all youth in the summer of 1980. Inclusion of graduation year in the equation controls for differences in class-standing at the time of testing. The plans and influence variables are (1) highest year of education expected, measured in the junior year, (2) occupation expected at age 35, coded to Duncan SEI values (answered in 1979 for 1980 and 1981 graduates, and in 1981 for 1982 graduates), and (3) significant other's influence, a four-step ordinal measure of the extent one's reported significant other (usually a parent) encouraged the youth to attend college. Minority status control variables are one's sex (male versus female) and ethnicity (black or Hispanic versus white). The time and place controls include (1) the year of graduation, (2) region of residence (Northeast, South, or North Central/Mountain versus Pacific), and (3) urban versus rural residence. These latter three variables control for unrelated time and place differences in college enrollment propensities that otherwise could confound the measurement of the business cycle effect. Two-year community colleges, for example, are more numerous in the Pacific region and urban areas.

Dependent Variables. The effect of the business cycle was estimated on four first-year college enrollment behaviors--college attendance, attendance with a student loan or grant, and the institutional enrollment quality of the attendance. The first three are dummy variables coded one if the respondent attends any college in the first year after graduation, and attends with a loan or grant, respectively. The fourth is a four-step ordinal variable coded 1 if the enrollment is part-time at a two-year college, 2 if full-time at a two-year college, 3 if at an in-state four-year college, and 4 if at an out-of-state four-year college.[8]

Estimation Procedures. The attendance variable is observed on the sample of all 1980-1982 high school graduates, while the financial aid and enrollment quality variables are observed only on the subsample of graduates who were first-year college attenders. Thus the business cycle results so obtained should be generalized only to their respective population and subpopulation.[9]

The equations for each dependent variable were estimated separately, using standard ordinary least squares methods. The efficiency of the OLS results for the three dichotomous dependent variable equations was checked against maximum likelihood-generated probit estimates. The two methods produced coefficients identical in sign and size relative to their respective standard errors, so there was no gain from replacing the more conventional OLS estimates with the probit ones.

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[8] Since nearly all first year attendance at a two-year college is in-state, and nearly all first-year attendance at a four-year college is full-time, the first two categories combine the few out-of-staters with the in-state students, and the second two categories combine the few part-time students with the full-time ones. Table 3.5 shows the enrollment distribution across all the possible enrollment categories, and Table 8 provides evidence for the validity of the category ordering.

[9] The financial aid and quality results are generalizable to the full sample of high school graduates if the unobserved variation in financial aid and enrollment quality potentials of nonattenders has the same determinants as the observed variation. The more serious issue is that the omission of this unobserved variation from the equations could also lead to biased estiamtes for the attenders (Heckman, 1979). This would occur if the disturbance terms for these equations correlated with the disturbance term of the attendance equation. Use of relatively large sample sizes and similarity in the composition and completeness of the equation specifications should tend to minimize the size of any such specification error. More direct evidence arguing against any significant selectivity bias comes from a comparison of the sample and subsample means and standard deviations for the 22 explanatory varaibles used in the regressions. The college attender sample contains about as much variance as the high school graduate sample, the difference being primarily in the mean values of the variables. The two exceptions were high school marital status and children, for which there was almost no variation in the college attender sample. Consequently the aid and quality equations estimated on the attender sample deleted these two variables.

The results for each outcome variable are presented in a set of successive reduced-form equations, following standard procedures for decomposing the total effect of a variable into its direct and indirect components (Alwin and Hauser, 1975). The first column of Tables 3.11-3.13 presents a six-variable reduced-form equation which estimates the total effect of the business cycle on each outcome net of the time-place and minority status control variables. The final column presents the full reduced-form equation, giving the direct effect of the business cycle net of the controls and all variables which are hypothesized to mediate its impact. The first reduced-form equation, in addition to providing the total effect estimate, also permits a policy interpretation--the extent to which current American youth, sorted on these positional and ascribed status variables, have equality of access to higher education. Here we shall report only the results that pertain directly to the business cycle effect.

College Attendance A rise in the area unemployment rate during the 1980-1982 period significantly reduced college attendance. On average, each one-point rise reduced attendance by three percentage points. About half of this total effect operated indirectly via its impact on socioeconomic position and the academic plans of the youth. The remaining half operated directly.

Financial Aid A rise in the area unemployment rate also significantly increased the likelihood that the subpopulation of college attenders would

Table 3.11 A Reduced-Form Equation for the Determinants of College Attendance One Year After High School Graduation, for 1980-82 High School Graduates: OLS Unstandardized Partial Regression Coefficients (n = 3,402)

	Variables added to equation							
Explanatory variables	Location and ascribed position (1-6)		+ life-cycle factors and origin family socioeconomic position (7-15)		+ academic performance factors (16-19)		+ interpersonal influence & plans (20-22)	
1) Grad. year (1980)								
1981	.022	(.97)	.002	(.12)	.026	(1.37)	.022	(1.23)
1982	.106*	(3.20)	.057	(1.91)	.101*	(3.64)	.076*	(2.84)
2) Male (female)	.006	(.33)	-.024	(-1.57)	-.001	(-.10)	.006	(.47)
3) Ethnicity (wh.)								
Black	-.099*	(-3.78)	.072*	(2.82)	.155*	(6.13)	.082*	(3.38)
Hispanic	-.057	(-1.35)	.133*	(3.46)	.162*	(4.52)	.096*	(2.78)
4) Region (Pacific)								
Northeast	-.006	(-.18)	-.052	(-1.78)	-.085*	(-3.14)	-.069*	(-2.67)
South	-.000	(-.02)	-.009	(-.34)	-.017	(-.65)	-.014	(-.59)
N. Central & Mt.	-.057*	(-1.97)	-.060*	(-2.22)	-.088*	(-3.48)	-.062*	(-2.55)
5) Urban (rural)	.089*	(4.30)	.020	(1.06)	.009	(.52)	.002	(.09)
6) Area unemp. rise	-.033*	(-4.14)	-.020*	(-2.86)	-.020*	(-3.02)	-.016*	(-2.57)
7) Wks. employed			-.000	(-.89)	-.001	(-1.76)	-.001	(-1.62)
8) Married			-.200*	(-3.88)	-.192*	(-4.00)	-.142*	(-3.11)
9) Children			-.132*	(-2.89)	-.071	(-1.68)	-.036	(-.89)
10) Fam. income (0-10)								
10-20			.048	(1.61)	.018	(.64)	.010	(.36)
20-30			.058	(1.87)	.019	(.66)	.009	(.34)
30+			.089*	(2.91)	.034	(1.18)	.019	(.72)
11) Fa. educ. (0-11)								
12			.010	(.49)	-.010	(-.50)	-.005	(-.25)
13-15			.088*	(2.95)	.066*	(2.39)	.044	(1.65)
16			.213*	(6.50)	.139*	(4.56)	.087*	(2.99)
17-20			.259*	(6.68)	.174*	(4.81)	.101*	(2.90)
12) Mo. educ. (0-11)								
12			.128*	(6.10)	.089*	(4.55)	.076*	(4.09)
13-15			.220*	(6.96)	.162*	(5.50)	.102*	(3.63)
16			.304*	(8.38)	.235*	(6.95)	.156*	(4.79)
17-20			.308*	(5.77)	.201*	(4.04)	.146*	(3.06)
13) Fa. occ. (no emp.)								
WC			.101*	(4.20)	.081*	(3.67)	.072*	(3.39)
BC			-.048*	(-2.31)	-.022	(-1.14)	-.007	(-.37)
14) Mo. occ. (no emp.)								
WC			.040*	(2.12)	.024	(1.36)	.010	(.62)
BC			-.038	(-1.94)	-.032	(-1.79)	-.034*	(-2.00)
15) Sibs., no.			-.017*	(-4.54)	-.010*	(-2.87)	-.008*	(2.52)
16) H.S. curr. (gen.)								
Voc., comm.					-.048*	(-2.16)	-.017	(-.82)
College prep.					.171*	(10.12)	.091*	(5.43)
17) H.S. rank (0-25)								
25-50					.071*	(2.67)	.058*	(2.28)
50-75					.113*	(4.26)	.084*	(3.30)
75-99					.184*	(6.59)	.133*	(4.95)
18) Sector (pub.)								
Cath.					.126*	(3.29)	.090*	(2.47)
Other priv.					.027	(.60)	.003	(.06)
19) AFQT					.006*	(10.39)	.003*	(6.38)
20) Educ. exp.							.065*	(15.09)
21) Occ. exp.							.001*	(2.10)
22) Sig. other infl.							.045*	(5.18)
NA disturbances								
Wks. emp.			-.179*	(-3.46)	-.128*	(2.59)	-.129*	(-2.73)
Fam. income			.031	(1.06)	.016	(.59)	.005	(.21
Fa. educ.			.020	(.64)	.034	(1.17)	.028	(1.03)
Mo. educ.			.041	(1.01)	.047	(1.25)	.039	(1.09)
H.S. rank					.007	(.30)	.003	(.15)
AFQT					-.116*	(-2.67)	-.080	(-1.93)
Constant	.417		.325		-.144		-1.00	
R^2	.017		.232		.346		.406	
F	5.77*		30.90*		41.28*		49.87*	
Dep. var. mean	.491							

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*$p < .05$.

[a] t values.

Table 3.12 A Reduced-Form Equation for the Determinants of College Financial Aid (Loans and Grants) for 1980-1982 High School Graduates Attending College One Year After Graduation: OLS Unstandardized Partial Regression Coefficients (n = 1,449)

Explanatory variables	Variables added to equation					
	Location and ascribed position (1-6)		+ employment and origin family socioeconomic position (7-13)		+ academic performance factors (14-17)	
	Loans	Grants	Loans	Grants	Loans	Grants
1) Grad. year (1980)						
1981	-.028	-.007	-.035	-.019	-.029	-.004
1982	-.149*	-.073	-.146*	-.055	-.126*	-.012
2) Male (female)	.023	-.024	.024	-.010	.020	.002
3) Ethnicity (wh.)						
Black	.059	.221*	.060	.115*	.120*	.222*
Hispanic	.032	.111	.044	.053	.084	.110
4) Region (Pacific)						
Northeast	.330*	.165*	.328*	.219*	.319*	.192*
South	.090*	.063	.091*	.097*	.094*	.082
N. Central & Mt.	.236*	.163*	.235*	.191*	.227*	.161*
5) Urban (rural)	-.124*	-.086*	-.120*	-.059	-.124*	-.064*
6) Area unemp. rise	.022*	.010	.023*	.013	.022*	.010
7) Wks. employed			.001	-.000	.001	-.000
8) Fam. income (0-10)						
10-20			-.056	.079	-.073	.056
20-30			-.056	-.055	-.074	-.085
30+			-.131*	-.214*	-.148*	-.248*
9) Fa. educ. (0-11)						
12			-.066	.020	-.074	.007
13-15			-.016	.043	-.022	.036
16			.019	-.034	-.000	-.061
17-20			-.043	.010	-.069	-.032
10) Mo. educ. (0-11)						
12			.043	.005	.040	-.010
13-15			.048	.022	.036	.005
16			.097	.082	.080	.056
17-20			.084	.010	.060	-.039
11) Fa. occ. (no emp.)						
WC			-.005	-.075*	-.002	-.072
BC			-.057	-.127*	-.043	-.098*
12) Mo. occ. (no emp.)						
WC			.086*	.044	.079*	.026
BC			.099*	.118*	.092*	.104*
13) Sibs., no.			-.006	.011	-.003	.014*
14) H.S. curr. (gen.)						
Voc., comm.					-.058	.014
College prep.					-.033	.058*
15) H.S. rank (0-25)						
25-50					-.053	.074
50-75					-.074	.094
75-99					-.022	.238*
16) Sector (pub.)						
Cath.					-.047	-.045
Other priv.					-.043	-.000
17) AFQT					.003*	.005*
NA disturbances						
Wks. emp.			-.106	-.060	-.081	-.025
Fam. inc.			-.104	-.169*	-.109	-.184*
Fa. educ.			-.020	.064	-.034	.057
Mo. educ.			.044	.052	.043	.061
H.S. rank					-.038	.110*
AFQT					-.115	-.116
Constant	.302	.387	.332	.442	.107	-.086
R^2	.067	.036	.097	.110	.115	.180
F	10.40	5.35	4.90	5.62	4.46	7.51
Dep. var. mean	.344	.421				

*$p < .05$.

Table 3.13 Reduced-Form Equation for the Determinants of College Enrollment Quality for 1980-82 High School Graduates Attending College One Year After Graduation: OLS Unstandardized Partial Regression Coefficients (n = 1,414)

	Variables added to equation							
Explanatory variables	Location and ascribed position (1-6)		+ employment and origin family socioeconomic position (7-13)		+ academic performance factors (14-17)		+ plans, infl. & financial aid (18-22)	
1) Grad. year (1980)								
1981	-.014	(-.26)	-.037	(-.73)	-.012	(-.25)	-.009	(-.19)
1982	.023	(.30)	-.027	(-.37)	.043	(.61)	.038	(.56)
2) Male (female)	.031	(.77)	.024	(.61)	.032	(.85)	.026	(.71)
3) Ethnicity (wh.)								
Black	.059	(.88)	.154*	(2.22)	.352*	(4.92)	.241*	(3.44)
Hispanic	-.082	(-.80)	.088	(.86)	.200*	(2.02)	.108	(1.13)
4) Region (Pacific)								
Northeast	.665*	(8.87)	.597*	(8.24)	.516*	(7.31)	.383*	(5.54)
South	.371*	(5.15)	.356*	(5.13)	.330*	(4.93)	.268*	(4.14)
N. Central & Mt.	.465*	(6.58)	.484*	(7.14)	.426*	(6.49)	.334*	(5.23)
5) Urban (rural)	-.116*	(-2.25)	-.144*	(-2.89)	-.165*	(-3.45)	-.125*	(-2.70)
6) Area unemp. rise	-.045*	(-2.38)	-.035	(-1.94)	-.033	(-1.90)	-.034*	(-2.05)
7) Weeks employed			-.003*	(-2.85)	-.003*	(-3.12)	-.003*	(-3.50)
8) Family income (0-10)								
10-20			-.024	(-.26)	-.076	(-.88)	-.055	(-.66)
20-30			-.184*	(-2.02)	-.244*	(-2.79)	-.189*	(-2.24)
30+			-.016	(-.18)	-.082	(-.97)	.014	(.18)
9) Fa. educ. (0-11)								
12			-.028	(-.46)	-.046	(-.78)	-.026	(-.45)
13-15			.108	(1.39)	.088	(1.18)	.070	(.98)
16			.198*	(2.54)	.146	(1.95)	.144*	(2.01)
17-20			.317*	(3.74)	.241*	(2.95)	.240*	(3.04)
10) Mo. educ. (0-11)								
12			.049	(.74)	.020	(.32)	.010	(.17)
13-15			.067	(.81)	.036	(.46)	-.008	(-.11)
16			.315*	(3.65)	.276*	(3.31)	.199*	(2.47)
17-20			.434*	(3.78)	.361*	(3.26)	.324*	(3.05)
11) Fa. occ. (no emp.)								
WC			.092	(1.57)	.104	(1.84)	.101	(1.86)
BC			-.014	(-.24)	.047	(.82)	.092	(1.68)
12) Mo. occ. (no emp.)								
WC			.067	(1.50)	.046	(1.08)	.009	(.21)
BC			.066	(1.18)	.053	(.98)	-.009	(-.17)
13) Sibs., no.			-.005	(-.51)	-.003	(-.28)	-.005	(-.49)
14) H.S. curr. (gen.)								
Voc., comm.					.036	(.48)	.086	(1.19)
Coll. prep.					.131*	(3.18)	.065	(1.60)
15) H.S. rank (0-25)								
25-50					.016	(.20)	.014	(.18)
50-75					.162*	(2.05)	.156*	(2.05)
75-99					.248*	(3.08)	.190*	(2.43)
16) Sector (pub.)								
Cath.					.142	(1.73)	.123	(1.55)
Other priv.					.019	(.18)	.011	(.11)
17) AFQT					.010*	(6.32)	.007*	(4.14)
18) Educ. exp.							.052*	(4.25)
19) Occ. Exp.							-.000	(-.02)
20) Sig. other infl.							.051*	(2.14)
21) Loan							.294*	(7.34)
22) Grant							.165*	(4.09)
NA disturbances								
Weeks emp.			.172	(.85)	.098	(.50)	.146	(.78)
Family income			.093	(1.04)	.058	(.68)	.133	(1.61)
Fa. educ.			-.095	(-1.01)	-.101	(-1.12)	-.077	(-.88)
Mo. educ.			.303*	(2.44)	.339*	(2.84)	.323*	(2.82)
H.S. rank					.138	(1.81)	.123	(1.67)
AFQT					.431*	(2.67)	.494*	(3.19)
Constant	2.33		2.22		1.28		.51	
R^2	.070		.182		.258		.320	
F	10.49		9.91		11.67		13.97	
Dep. var. mean	2.686							

*p < .05.

take out a student loan, but had no effect on whether or not they received a grant. Each one-point rise in unemployment corresponds to a two percentage point increase in the likelihood of a loan. This cycle effect operated directly, independent of the youths' socioeconomic position or academic performance level. Socioeconomic and academic factors were themselves, however, significantly related to financial aid receipt.

Enrollment Quality For the subpopulation of college attenders a local rise in unemployment also significantly reduced the quality of the institution they chose to attend. Approximately 80 percent of this total effect operated directly; the other 20 percent was mediated by family socioeconomic position and the negative effect of additional youth employment. Use of financial aid, particularly loans, had its expected strong effect on enrollment quality, independent of the business cycle effect.

In summary, these findings tend to confirm the earlier trend results. Graduating from high school when an economic contraction is taking place does reduce youths' attainment of higher education, affecting both the tendency to attend college and the institutional quality of the college attended. In addition, these equations provide a preliminary estimate of the size of the effect. Generally speaking, this effect is quite small, in the sense that it accounts for only a small fraction of the variation in educational attainment that is explained by the full model. Another way to gauge its size, for possible social policy purposes, is relative to the other "equality of access" control variables (column one). From this perspective, it took approximately a three-point rise in area unemployment to reduce college attendance as much as did being black or from a rural location.

The unexpected findings pertained to the relationship between the business cycle and student financial aid. Grants were both need- and merit-determined, as shown in the substantial negative effects of family incomes over $30,000 and the positive effects of AFQT score and upper quartile class rank. The probability of getting a grant, however, was unrelated to business cycle fluctuations, suggesting that the amount of funding made available for educational grants occurs independently of changing macro-economic conditions.

By contrast, the taking out of loans, which among college attenders was more exclusively need-determined, did increase with worsening economic conditions. If one makes the not unreasonable assumption that the ability and willingness to take a student loan had as much impact on high school graduates' attendance likelihood as the actual use of loans had on the enrollment quality of attenders, the widespread availability of loans during this time period (see footnote 7) was a primary reason why college attendance did not drop during the recent economic recession. The continued availability of such loans during future economic recessions would therefore be expected to both stabilize college attendance levels and counteract the tendency to select colleges of lower institutional quality. On the negative side, increased use of loans also means that recession year students are more likely than other students to begin their post-college employment encumbered with loan debts, and hence with a reduction in their net personal income levels and all that implies for their initial economic and social well-being.

These conclusions can only be tentative. Our finding of a business-cycle effect, although intuitively obvious, has not been demonstrated in previous research on college enrollment behavior, so it should be replicated using alternative data sets, research designs, and time periods.

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Appendix

Table 3.A.1 Stability of Choice of Major: Major Field of Study of College Youth in Third Year after H.S. Graduation by Major Field in First Year, for all 1978-1980 H.S. Graduate Enrolled in Both Years

First Year Major:	Third Year Major Business	Engin.	Comp. Sci.	Health Prof.	Educ.	Phys. Sci.	Bio. Sci.	Soc. Sci.	Arts & Let.	Other	Total, 1st Ye
Business	63.5%	6.5%	19.5%	3.4%	11.3%	9.9%	4.2%	14.7%	10.1%	10.9%	24.1%
Engineering	2.9	66.4	9.1	2.1	1.6	13.9	0.0	0.0	7.7	3.8	9.4
Computer Sci.	2.4	4.1	37.0	0.6	2.0	0.0	0.0	0.0	0.0	2.7	3.7
Health Prof.	1.1	0.0	1.4	49.3	4.2	1.2	9.0	3.7	0.7	3.0	6.1
Education	3.0	1.1	3.4	9.3	45.6	7.9	3.9	5.7	8.2	5.3	8.7
Phys. Sci.	2.2	4.2	3.3	1.6	0.2	44.2	0.0	2.3	0.0	4.0	3.7
Bio. Sci.	2.1	3.4	6.2	11.4	1.1	8.8	56.2	5.2	0.7	4.8	6.5
Soc. Sci.	0.7	0.0	5.6	5.4	8.7	0.0	3.3	49.3	9.8	5.5	8.3
Arts & Letters	3.2	2.5	2.4	2.9	9.1	0.0	0.7	5.9	36.6	3.8	6.2
Other	19.0	11.9	12.1	14.0	16.2	14.0	22.7	13.2	26.2	56.0	23.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total, Third Year	26.2	9.3	5.5	8.0	9.8	3.4	4.7	9.6	7.2	16.5	100.0
N (thousands)	841	299	176	256	315	108	149	307	233	530	3,215
n	254	83	55	88	96	25	40	83	68	158	950

Chapter 4

Welfare Patterns among Young Mothers: A Descriptive Analysis

Joan E. Crowley

Recent research on fertility patterns in the United States has uncovered two seemingly contradictory trends. On the one hand, there is a growing tendency for young women to postpone their childbearing and enter the labor market with higher levels of education and commitment to the labor force than their predecessors. At the same time, an increasing number of non-college bound teenagers are having babies and choosing to care for them (Mott and Maxwell, 1981). Several studies have documented that early childbearers tend to get less education and have larger families, thus remaining economically behind women who begin their families at later ages (Moore, et al., 1979).

Early childbearing has contributed to the observed feminization of poverty--the growing proportion of the poverty population in female-headed households. Even if young mothers marry before their babies arrive, teen marriages have a high incidence of divorce, so that the young mothers have a relatively high risk of being both the sole parent and the sole source of financial support for their children. One of the more disturbing implications of the two countervailing trends in childbearing is that teenage mothers are increasingly disadvantaged in their earnings capability, because when they seek employment they must compete with an enlarged pool of educated, work-experienced women.

The potential of childbearing for leading to welfare dependency is the focus of this chapter. Young mothers are selected for special attention for several reasons. As noted above, there is evidence that early childbearersface particular difficulty in becoming self-sufficient, due to their lower levels of education and the large proportion who are either never married or who experience marital disruption and therefore face the task of supporting themselves and their children on a single income.

The major means-tested cash transfer program is Aid to Families with Dependent Children, usually considered synonymous with welfare, and in particular with the term "welfare mother." The popular press image of poor women is clear:

> Born to a black child bred in poverty, 14-year-old Lucy brought forth her own child in poverty.
>
> Like her disappointed mother, a grandmother at 29, Lucy dropped out of school when her baby was born. Like her mother, she has no husband to share the economic and emotional burdens of parenting. (Cordes, 1984).

The image can be elaborated further to include joblessness, a large family, and permanent poverty. This paper assesses the legitimacy of the image.

In considering the political and social legitimacy of welfare programs, there seems to be a social consensus that people who are willing but unable to work should be supported at some minimal level. The sticky issues arise in defining "unable to work." Two major welfare programs, Supplemental Security Income and Medicaid, are based on health or disability, and are relatively uncontroversial, except for problems associated with the technical definitions of when persons are too disabled to be employed or too poor to pay for their own medical care. General Assistance, Food Stamps, and Aid to Families with Dependent Children, however, are perceived to go to support persons who are able-bodied, and here there is more controversy about whether, for how long, and at what level people should receive income maintenance. If benefits are too high and the criteria for eligibility too expansive, welfare becomes an attractive alternative to low paying, unsatisfying jobs. If benefits are too low and the criteria too stringent, people who do not, for one reason or another, fit into the labor market suffer the consequences, leading presumably to such socially unacceptable outcomes as malnutrition, crime and beggary.

The payments distributed by the Aid to Families with Dependent Children, the largest of the means-tested transfer programs, are designed specifically to provide a minimum level of income for families' dependents, especially families with small children. The program is based on the assumption that society has an interest in the outcomes of child raising, that small children are best off if cared for by their mothers, and that therefore these mothers should not be expected to hold jobs outside the home. The welfare system, as structured, places single parents of small children in the same not-expected-to-work category as the aged and the physically disabled. Our assumptions about the importance of having the mother at home have changed, however, so that now a very large proportion of married women with small children are in the labor force. Thus, the public may question the appropriateness of providing income maintenance to women who might be employed if they weren't paid to stay home by the government. The program acknowledges that some women, although employed, cannot earn enough money to provide for their children at a socially acceptible minimum level. In fact, few AFDC families rely on welfare as their only source of income. Much of the economic work on welfare programs has focused on estimating the size of the impact of welfare on labor supply (for a review of this literature, see Danziger, Haveman, and Plotnick, 1981).

Recent research based on the availablility of large longitudinal data sets such as the NLS and the Michigan Panel Study of Income Dynamics (PSID) have demonstrated that the majority of individuals who are in poverty or on welfare at some time in their lives are poor only temporarily (Mott, 1983; Moore, et al., 1978; Coe, 1978; Rein and Rainwater, 1978). Most will find a way to provide adequately for themselves and their families, after a period of adjustment to some relatively temporary interuption in their earnings (e. g., unemployment, death of a breadwinner, disability). However, factors associated with long-term poverty and welfare dependency include low education, limited work history, and early childbearing. These recipients have very low expected wages, along with relatively high demand for their services at home, so the work disincentive effect of transfer payments would be strongest in this group.

Although the above-mentioned studies from the NLS and the PSID have given good descriptions of the variations in welfare receipt over the years, these data bases do not contain the detail on welfare patterns of young mothers available in the NLS Youth cohort data. In particular, the youth were asked to indicate welfare receipt on a monthly basis, allowing a much more rigorous look at the patterns of welfare over time. This paper will use the longitudinal design of the NLS to look very closely at which young mothers receive welfare, how they compare with non-recipients, and the temporal aspect of welfare receipt--how long they are on welfare and when they are on welfare relative to the birth of the first child. The analysis is descriptive, and is intended to provide a basis for future analyses rather than to answer complex questions about welfare causation.

WELFARE PROGRAMS AND ISSUES

There are four major welfare programs measured in detail in the NLS.

Each has a different history and target population. Food Stamps were devised specifically to address the problem of hunger in a nation whose farmers produced more food than they could sell. For persons whose income was considered too low to afford food for proper nutrition, stamps were issued only to purchase supplemental food. Historically, the income levels for Food Stamp eligibilty have been more lenient than those for other programs. Also, income is the only criterion used to determine food stamp eligibility. All other programs are focused on specific categories within the poverty population. For Food Stamps, the public benefits involve maintaining a healthy and thus productive population, as well as alleviating human distress.

Supplemental Security Income (SSI) is essentially a means of providing income for the aged, blind, or disabled, who have not qualified for such income from regular Social Security. AFDC, the largest of the transfer programs, actually started in the 1930's as a program for widows with small children, in an age when married women were not expected to work (Barnes, 1978). In the 1960's, the program was expanded to provide income for poor, usually female-headed families, other than widows. In some states, the program allowed payments to intact families of unemployed fathers (AFDC-U). Technically, it is the children in the family for whom the money is provided. While AFDC programs are largely federally funded, they are administered by the states, which vary enormously in their eligibility standards and in their stipends. General Assistance is funded wholly by the states, and covers people who do not fall under any of the other programs.

In looking at welfare and early motherhood, we will define two categories of welfare recipients: those who receive any form of welfare and those who receive AFDC specifically (with or without any other subsidies). In the controversy over welfare eligibility, AFDC has been the focus of attention, both because it is very large and expensive and because of concern that daughters of recipients were themselves having babies in order to gain a subsidy that would allow them to avoid entering the labor market. Thus, AFDC itself is of particular importance for the population of young mothers, because it is their motherhood, along with their poverty, that qualifies them for the program. On the other hand, AFDC, as noted, is only one of several transfer programs. Using total welfare allows us to describe how welfare in general varies among our target population.

SAMPLE

The main focus of the analysis will be on welfare patterns among young mothers, although a few comparisons will be made between young mothers and the remainder of the sample of young women. Most of the tables will present age-graded contrasts between mothers who went on welfare and those who didn't, or will describe the patterns of welfare receipt among the subset of welfare mothers.

The reasons for the restriction are both practical and conceptual. On a practical basis, comparisons of mothers with non-mothers introduces into the analysis the process by which young women decide to have children. Restricting the analysis to young mothers means that the sample consists of only those women who have already decided to have a child, or at least decided not to avoid childbearing. Although the problems of comparing mothers with non-mothers could be minimized by using the total sample with sufficient statistical controls, separate comparison groups would be required for each cohort of new mothers in order to establish appropriate period variables. In contrast, it is simple to contrast welfare mothers with non-welfare mothers, using date of first birth for both groups to establish appropriate temporal structures.

For the analysis, one critical variable is the date of the first birth. The literature on consequences of childbearing shows large variations according to the age of the mother at the birth of her first child, since the negative consequences are concentrated among women who have not completed high school when they become mothers. Most young women, regardless of their income, are not eligible to receive AFDC themselves until they have borne a child. The income and time demands of the baby may make what was previously a marginally adequate income into an inadequate one, so that other forms of welfare are more likely to be provided to a household with dependents than to a one-person household. If, in addition, the mother's employment does not provide access to adequate health care, the need for medical attention may make welfare, with its access to Medicaid, an economically attractive alternative to a low-wage job.[1]

One of the major advantages of the NLS for this study is that, since the interviews are annual, over the years a respectable number of women for whom extensive background financial and social information is known have become mothers. In most cases, the sample will be limited to the 1348 women who had their first birth between January 1, 1978 and January 1, 1981. The restriction allows a minimum of 12 months of welfare data following the first birth for each woman in the sample, while assuring that in all cases at least some information is available on the situation of the young woman at the time she gave birth.

Table 4.1 describes this sample, listing the number of women who become mothers at each age in each of the calendar years for which complete data are available. In this table, as elsewhere in this paper, two ways of calculating welfare are used. The first refers to whether any welfare was reported--SSI,

Table 4.1 Patterns of Welfare and AFDC Receipt for Mothers and Non-mothers, of First Birth and Motherhood by Calendar Year and Age

	13	14	15	16	17	18	19	20	21	22	23	24
1978												
N	614	752	787	781	815	880	832	827				
% first birth	*	1	2	2	5	5	5	6				
% mothers	*	1	3	4	11	17	22	32				
Mothers												
% welfare	*	30	30	43	35	43	28	34				
% AFDC	*	21	16	24	17	24	19	15				
Non-mothers												
% welfare	*	*	*	1	3	4	3	5				
% AFDC	*	*	*	*	*	1	*	*				
1979												
N		614	752	787	781	815	880	832	827			
% first birth		1	2	3	6	3	7	6	4			
% mothers		1	3	6	10	15	25	29	36			
Mothers												
% welfare		5	39	38	39	43	40	32	28			
% AFDC		*	20	19	18	20	20	16	15			
Non-mothers												
% welfare		*	1	1	3	3	4	3	5			
% AFDC		*	*	*	*	1	*	1	*			
1980												
N			614	752	787	781	815	880	832	827		
% first birth			2	6	4	8	6	7	6	4		
% mothers			3	9	10	18	20	32	34	40		
Mothers												
% welfare			26	44	50	48	39	36	31	29		
% AFDC			14	28	31	26	19	19	16	15		
Non-mothers												
% welfare			*	*	4	4	5	4	2	3		
% AFDC			*	*	1	*	*	*	*	1		
1981												
N				614	752	787	781	815	880	832	827	
% first birth				4	4	5	7	4	6	4	6	
% mothers				7	13	15	25	25	37	39	46	
Mothers												
% welfare				29	51	45	39	36	31	25	27	
% AFDC				19	32	26	24	23	16	16	13	
Non-mothers												
% welfare				1	4	5	2	4	4	4	3	
% AFDC				*	1	*	*	*	*	*	*	

UNIVERSE: Female youth respondents. N's are unweighted, percentages weighted.

*Less than 0.50.

AFDC, Food Stamps, or any other cash transfer (presumably, most reports of other welfare refer to General Assistance). The second calculation involves the receipt specifically of AFDC, regardless of whether or not any other welfare payments are involved. The format of the table allows us to track age, period, and cohort patterns in both childbearing and welfare use. It also highlights some peculiarities of using panel data to study age-related phenomena.

Each row in Table 4.1 represents one calendar year, showing, for each year of age, the women who had their first birth in that year, and those who had ever had a baby by the end of the year. The percent of women receiving welfare at any time during the year is also shown, broken down separately for mothers and non-mothers. By looking across the rows, we can see whether there appear to be any age trends in welfare receipt.

With each passing year, the sample ages. Thus, the only observations of first births to 13-year-olds are from data on 1978. These 13 year olds are age 14 in 1979, 15 in 1980, and 16 in 1981. Similarly, observations of first births to 24-year olds, the oldest group of the sample, are available only for 1981. Table 4.1 shows that only the age range from 16 to 20 is available for all years of the current study. The columns of the table give the patterns in births and welfare receipt over the years for each given age level.

Finally, Table 4.1 allows us to track any given birth cohort by going down the table diagonally. As noted, the youngest members of the sample show up in the column under the age 13 in 1978, age 14 in 1979, and so forth. Note that the percent of women who have become mothers in any age-year cell of the Table is equal to the percent of that cohort who were mothers in the previous year, plus the number who had a first birth in the current year (a few apparent discrepancies are due to rounding). Thus, Table 4.1 allows us to contrast patterns of welfare for each birth cohort as they age by looking at the diagonal rows, at the effects of age in each period by looking across the horizontal rows, and the effects of each calendar year period for each age group by looking down the vertical columns.

The number of mothers in each cell is small enough that small fluctuations from one year to the next are fairly meaningless, but some patterns are consistent enough to be worth noting. Across the years, women under the age of 15 are unlikely to become mothers. The rate of first birth increases in most years over the middle teens (16 to 17 years old), then stabilizes, so that about 5 to 7 percent of the women in each age group over 17 have their first birth in any given year. Despite the low rates in each cell, the cummulation of first births over time means that about half of the young women have had at least one child by age 23. It also means that the apparently constant fertility across ages is misleading, since the number at risk for a first birth (i. e., the proportion of non-mothers) declines from 99 percent at age 14 to 54 percent at age 23. Fertility at the older ages is further understated since the table only breaks out first births and some mothers are still enlarging their families with new births.

Looking at welfare from all sources, we see that the very youngest mothers, those under the age of 17, have actually a lower level of welfare receipt than do older mothers. Other researchers have noted a similar pattern, attributing it to the greater tendency of these very young mothers to continue living with their parents rather than establishing an independent household (Scheirer, 1983). The proportion on welfare increases to almost half among the 17 and 18 year old mothers, apparently declining somewhat thereafter. Between a half and two thirds of the welfare recipients report getting AFDC. For the non-mothers, in sharp contrast, very few report receiving any form of welfare, and AFDC is quite uncommon.[2]

Table 4.1 demonstrates some of the properties of the data set. In those cases where we wish to look at the economic and social conditions surrounding the birth of the first child, we will be limited to observing those mothers whose first births occurred after January 1, 1978. This sample will not be representative of all mothers. First births to 14-year-olds, for example, can be observed in only two of the four interview years, 1978 and 1979. In contrast, first births to young women between the age of 16 and 20 can be observed in all four years. Thus, births to women aged 16 through 20 will be overrepresented, while births to older or younger women will be relatively underrepresented. Age of the mother at first birth will also be correlated with the date of birth, since the sample is younger in the earlier years. Comparisons across years or over time therefore need to be made cautiously, keeping these caveats in mind.

While Table 4.1 is important for understanding the structure of the data set, dividing the sample into so many cells means that overall patterns get lost in the expected small sample variablity. Table 4.2 restricts the sample to young women who were 16 to 20 years old in each period, the age range observed over all years, and shows women who were under 19 in the observation year and those who were over 19. For each age group, the first two columns of the table refer to welfare receipt in the calendar year of the observation. Young mothers consistently report higher levels of welfare use than do older mothers. There appears to be a trend toward higher levels of use in the later years than in the earlier years, perhaps due to the downturn in the economy following 1979.

The last two columns of the table for each age group show whether or not the women had ever received welfare during the period from 1978 to the end of

Table 4.2 Welfare Patterns for Young Women 16-20, by Year and Motherhood Status

	16-18				19-20			
	Welfare	AFDC	Welfare ever	AFDC ever	Welfare	AFDC	Welfare ever	AFDC ever
1978								
Mothers	45	21	76	44	33	17	55	36
Non-mothers	8	*	24	7	6	*	18	4
Total	12	3	30	11	13	5	28	13
1979								
Mothers	47	19	76	48	36	18	59	37
Non-mothers	7	*	23	5	6	*	17	3
Total	11	2	28	10	14	5	29	12
1980								
Mothers	53	28	74	46	38	19	62	35
Non-mothers	8	*	22	4	7	*	19	2
Total	14	4	28	9	15	5	30	11
1981								
Mothers	48	27	73	44	39	23	65	35
Non-mothers	8	*	21	2	6	*	17	2
Total	13	3	27	7	14	6	29	10

UNIVERSE: Female youth between the ages 16-20.

*Less than 0.50.

Welfare - receiving welfare during calendar year.

AFDC - receiving AFDC during calendar year.

Welfare ever - ever received welfare, 1978-1982.

AFDC ever - ever received AFDC, 1978-1982.

1982. As of 1981, two thirds of the mothers over the age of 18 and almost three quarters of the mothers 18 and younger had received welfare for at least one month. Almost all of these women had received welfare following the birth of their child. About half of the welfare recipients had received AFDC. The apparent changes in ever receiving welfare over time are most likely spurious, or at least overstated, since most of the fluctuation can be attributed to women who move from the non-mother to the mother category over the years. Clearly, a very large proportion of teenage mothers rely at some time on welfare as at least partial income support.

Characteristics of Welfare Recipients: Contrasts with Non-recipients

Tables 4.1 and 4.2 did not distinguish the timing of welfare receipt relative to the timing of the first birth. Table 3 shows the proportions of young mothers who received welfare before their pregnancy, defined as ten or more months before the first birth, during pregnancy, and after the first birth. The proportions shown are somewhat different from those in Table 4.2 because the sample is unrestricted on age and the welfare categories do not include welfare received by the young woman's family. Note, first of all, that very few young mothers report receiving any form of welfare in the period before their pregnancy. The proportion increases to almost 1 in 5 during pregnancy, and to slightly under half after the first birth.

Table 4.3 also cross-tabulates each pair of welfare periods, and, as expected, the probability of being on welfare in each successive period is higher if the young woman received welfare at the preceding stage. This correspondence is not absolute, however. About one third of the young women reporting welfare before the first birth do not report receiving it after the baby arrived. Knowing that welfare was not received in one stage, however,

Table 4.3 Patterns of Welfare aod AFDC Over Time Relative to First Birth

	N	% of sample	Welfare before pregnancy		Welfare during pregnancy	
			No	Yes	No	Yes
Percent of sample			95	5	81	19
Welfare before pregnancy						
No	1035	95				
Yes	54	5				
Welfare during pregnancy						
No	884	81	85	36		
Yes	205	19	15	64		
Welfare after first birth						
No	570	52	58	34	66	14
Yes	519	48	42	66	34	86

	N	% of sample	AFDC before pregnancy		AFDC during pregnancy	
			No	Yes	No	Yes
Percent of sample			99	1	92	8
AFDC before pregnancy						
No	1082	99				
Yes	7	1				
AFDC during pregnancy						
No	1005	92	94	2		
Yes	84	8	6	98		
AFDC afterfirst birth						
No	766	70	74	53	79	8
Yes	323	30	26	47	21	92

UNIVERSE: Women whose first birth was between January of 1979 and December of 1981. Percents are based on weighted data.

Welfare before pregnancy is receiving welfare 10 months before first birth.

AFDC before pregnancy is receiving AFDC 10 months before first birth.

does not give much information as to welfare status in the next. The patterns for AFDC are similar, but welfare is even more concentrated on the period after birth of the child. Almost all of the women who received AFDC during pregnancy received at least one AFDC check after the child was born.

Table 4.4 shows some of the characteristics of young mothers, separating them by whether they had ever received welfare between January of 1978 and December of 1982, after the birth of their first child.[3] Unless otherwise noted, all characteristics are measured at the time of the 1983 interview.

In general, the younger the mother at her first birth, the more likely she was to receive welfare or AFDC in the period covered by the NLS. The proportions range from over 8 out of 10 among women who were 15 at first birth, to 1 out of 10 for those 24 or older. The pattern is the same, although the proportions are smaller, when only AFDC is considered.

The distributions by race confirm that minority women, especially blacks, are more likely to receive welfare than are whites. Almost 8 out of 10 black mothers received some form of welfare, and 6 out of 10 received AFDC, whereas among white mothers, 4 out of 10 received welfare, and 2 of 10 received AFDC. Hispanics had welfare rates intermediate between the other two groups, but closer to whites than to blacks.

The welfare rate among women who themselves come from female-headed households is substantially higher than the rate among women from intact households. It is unclear whether or to what extent the effect of coming from a broken home might be due to women from such homes being less likely to be self-supporting or, alternatively, to grandmothers being less able than grandfathers to provide supplemental income support when it is needed.

The latter explanation is at least partially supported by the relationship between welfare and marital status at the date of the first birth. One

Table 4.4 Selected Characteristics of Young Mothers by Welfare and AFDC Status

(Percent distributions)

Characteristics	Received welfare after first birth[a]		Received AFDC after first birth[a]		N[b]
	Yes	No	Yes	No	
Age of respondent at first birth:					
11-14	*	*	*	*	7
15	80	20	55	45	31
16	77	23	55	45	92
17	62	38	38	62	175
18	72	28	48	52	192
19	46	54	26	74	239
20	41	59	25	75	245
21	32	68	12	88	177
22	16	84	7	93	113
23	19	81	10	90	59
24-25	15	85	10	90	18
Race:					
Hispanic	51	49	30	70	235
Black	73	27	55	45	396
Other	39	61	20	80	717
Living arrangement when respondent was at age 14:					
Both parents	41	59	24	76	798
Mother only	62	38	43	57	269
Other	51	49	30	70	280
Marital status of date of first birth:					
Never married	75	25	59	41	516
Married	33	67	12	88	750
Formerly married	53	47	43	57	55
Employment status first interview after first birth:					
Working	42	58	26	74	673
Unemployed	50	50	29	71	675
Employment status second interview after first birth:					
Working	41	59	24	76	698
Unemployed	52	48	32	68	650
Number of children in household (83):					
0	47	53	26	74	54
1	46	54	28	72	825
2	45	55	27	73	388
3	57	43	37	63	70
4-7	100	*	13	87	11

Table 4.4 (continued)

UNIVERSE: Mothers whose first birth was between January 1978 and December 1981 and who were interviewed in 1983. (unweighted N = 1348, weighted N = 2,291,400).

*Less than 0.50.

[a] Percentages calculated using sample weights.

[b] N's unweighted.

third of the mothers who were married when their child was born report receiving welfare, in contrast to three quarters of the never married mothers. Having a man in the house, or at least a second potential wage earner, helps to protect against welfare dependence.

The proportion of women on welfare is surprisingly unrelated to their employment status one or two interviews after the first birth. The proportion of women who reported receiving welfare after the birth of their first child was over 4 in 10 among the women employed on the subsequent interview, a proportion which increases to only 5 in 10 among those not working at that interview. The difference in proportion of workers vs non-workers receiving AFDC on the interview subsequent to childbirth was only three percent. The gap in welfare proportions between workers and non workers was only very slightly larger by the second interview after the first birth. Although it is contrary to the stereotype of welfare mothers as being totally dependent on government, this pattern is consistent with research which shows that long-term welfare recipients are more likely to be working while on welfare than are short-term recipients. The characteristics associated with early childbirth, particularly low education, are also associated with low wage employment. At minimum wage, even full time employment may not provide enough income to prevent a mother from qualifying for welfare supplements.

It was expected that the proportion of women on welfare would increase with the number of dependent children, for two reasons. First, greater numbers of children both increase the need for income and increase the opportunity costs of mothers working outside the home due to increased child care needs. Second, if early childbearers are more likely to have higher final levels of fertility, among this young sample it was expected that the early, welfare-prone mothers would be more likely to have more than one child. These expectations were weakly supported, if at all, if the number of children (own or stepchildren) in the household at the time of the 1983 interview is considered. There appears to be an increase in welfare receipt of about ten percent after the third child, but none between the first and second. The number of women in this sample having more than three dependent children is too small for reliable comparisons.

Education is a critical factor in the employability of young people. Table 4.5 shows that indeed mothers who receive welfare are more likely to be dropouts than are non-welfare mothers. However, the relationship between educational attainment and welfare is not as strong as commonly believed. Over sixty percent of those receiving any type of welfare and over fifty percent of those receiving AFDC had completed at least a high school diploma, the modal level of education for both welfare and non-welfare mothers.[4] AFDC recipients tend on average to have the lowest levels of education.

Respondents were asked several times over the course of these interviews to indicate the highest level of education that they expected to complete. This question is more grounded in reality than the more usual question of educational aspirations, but the results for both questions are generally quite similar (Crowley and Shapiro, 1980; Crowley, 1983). Using the responses from the 1982 interview--the last time the question was asked and a point at which all of the women in this sample were mothers--we show in Table 5 that many of the welfare mothers have very high educational aspirations. Indeed, contrasting AFDC recipients with non-recipients shows the distributions of educational expectations to be almost identical. If welfare mothers have lower educational attainments than non-welfare mothers, it is not a function of any rejection of education as a goal, or even of rejection of education as an attainable goal.

Table 4.5 Education and Welfare Motherhood

(Percentage distributions)

	Attainment, 1983		Expectations, 1982		Mother's education	
	No welfare	Welfare	No welfare	Welfare	No welfare	Welfare
0-8	2	7	1	3	14	21
9-11	14	33	7	14	27	37
12	60	50	48	51	48	36
13-15	20	10	22	17	5	4
16+	3	*	22	15	4	2
N	654	694	650	689	612	645
	No AFDC	AFDC	No AFDC	AFDC	No AFDC	AFDC
0-8	4	7	1	2	17	18
9-11	18	36	10	11	29	38
12	59	46	49	49	45	35
13-15	17	11	20	19	5	4
16+	2	*	19	18	3	3
N	909	439	887	427	846	411

UNIVERSE: Women whose first birth was between January 1978 and December 1981.

Table 4.5 also shows the educational levels of the respondents' mothers.[5] Overall, mothers have less education than their daughters, a generational effect due to secular changes in women's educational patterns. Daughters who have received welfare following the birth of their first child are more likely than non-recipient daughters to have mothers who did not finish high school, but welfare status is completely unrelated to whether the young woman's own mother was educated beyond high school. This pattern may indicate that, while the mother's graduating from high school makes an appreciable difference in the ability of daughters to support themselves without welfare subsidies, there is no further advantage from the mother's additional education.

In sum, Tables 4.4 and 4.5 show that variables associated with social class and adult status--age, race, coming from an intact home, marital status, and education--all are related to the probability of young mothers receiving welfare. Many of the relationships shown in the tables were weaker than expected, however, especially surprising in the case of employment status and number of children. Although welfare is more common among women from less priviledged or resource-laded backgrounds, there is a great deal of variation within the welfare population.

Variations in Welfare Patterns.

A second topic for this paper, in addition to contrasts between welfare mothers and non-welfare mothers, is variations in the patterns of welfare receipt within the welfare group. The degree of detail available on the NLS allows more precise contrasts than are possible with other data sets.

The "number of children" variable used in Table 4.3 allows us to look at the number of children in the household as of 1983. Another way of studying the effect of the number of children on welfare receipt is to look within the welfare sample at the number of children dependent on the respondent--either the respondent's own children or stepchildren--who lived in the household at the interview following the first welfare check (Table 4.6). It appears that most women who receive welfare receive it after the birth of their first child. A little over one in ten receive welfare only after there are two children in the household. A few women with no reported children in the household also receive welfare: these could be in part due to reporting errors, or the aid could be received in support of a dependent other than the respondent's own child, such as a sibling or sibling's child.

Timing of welfare relative to the first birth is shown on Table 4.7. The common image is that welfare and motherhood are simultaneous, and in about two-fifths of the cases, they are. However, almost a third of the women who received welfare following the birth of their first child did not receive the first payment until over a year after the birth. Women who become mothers when they are less than 19 years old are more likely than older mothers to start their welfare receipt period [illegible] the first month but before the end of the first year.

The length of time people depend on the program is a major policy issue for AFDC. Welfare recipients on the NLS survey indicate in which months of the year they received welfare, allowing a very good calculation of the duration of dependency. Note that the number of months at risk for welfare receipt for mothers varies by the date of birth. For this reason, Table 4.8 shows characteristics of welfare receipt separately by year of first birth. Within each column, the months at risk vary by 12 months.

As expected, the distributions for the earlier years show a greater dispersion of time on welfare. Of those who received any welfare at all, one

Table 4.6 Number of Children in Household, Interview Following First Welfare After First Birth

(Percentage distributions)

Number of children	Type of welfare	
	Welfare	AFDC
0	6%	6%
1	80	79
2	12	14
3	1	1
4-7	1	0
N	654	439

UNIVERSE: Mothers with first birth between January, 1979 and December, 1981.

Table 4.7 Time Between First Birth and First Subsequent Welfare Month

	Age of mother at first birth		
	18 or younger	19 or older	N (unweighted)
Months between first birth and welfare			
1	35%	44%	297
2-12	35	28	223
13 or more	30	28	187
Mean	10	8	
Months between first birth and AFDC			
1	29%	48%	174
2-12	35	22	136
13 or more	36	30	137
Mean	11	9	

UNIVERSE: Women whose first birth was between January of 1978 and December of 1981. Percents based on weighted data.

Table 4.8 Number of Months on Welfare and AFDC After First Birth, by Year of First Birth

(Percentage distributions)

	Year of birth of first child			
	1978	1979	1980	1981
Welfare				
N (unweighted)	175	183	191	145
Number of months on welfare				
0	-	-	-	-
1-6	20	32	41	40
7-12	21	16	18	28
13-18	14	13	13	23
19-24	8	9	12	9
25-36	20	15	16	
37-48	11	14		
49-60	7			
Mean	26	18	14	10
AFDC				
N (unweighted)	116	118	118	87
Number of months on AFDC				
0	-	-	-	-
1-6	18	35	37	31
7-12	19	15	23	39
13-18	8	10	10	17
19-24	16	10	13	14
25-36	23	20	17	
37-48	10	8		
49-50	5			
Mean	24	17	14	12

UNIVERSE: Mothers who received welfare after their first birth, whose first birth was between January, 1978 and December, 1981 and who were interviewed in 1983.

fifth of those whose first birth was in 1978--over four years prior to the last measured month (December, 1982)--had received welfare for six months or less. The proportion of welfare recipients who reported six or fewer months on welfare doubled among those whose first birth was in 1980 or 1981, less than two years before the last measured month. The pattern implies that some mothers encounter multiple spells of welfare dependency. Over the years, more women move into the higher categories of months on welfare. At the same time, the longer the length of time between first birth and the end of the observation period, the lower the percentage of months spent on welfare. The pattern emphasizes that welfare dependency is not a permanent state.

Although the proportion of young mothers receiving any form of welfare is about double the proportion of recipients when only AFDC is counted, there is little difference in the mean number of months welfare was received. For each first birth cohort, the mean number of months on welfare or AFDC was about half of the maximum number of months observed.

The 1978 first birth cohort provides the longest follow-up period. As the table shows, there is a considerable amount of variability in the number of months on welfare. About 1 in 6 welfare mothers receive welfare for over 3 years, out of an observable maximum of 5 years. Most of the mothers, however, receive payments for fewer than eighteen months.

These figures understate to some extent the degree of welfare dependency, since they do not take into account uncompleted spells of welfare receipt. What they do show is the variability of time on welfare, suggesting that it is, for most, a transient state, although in some cases a repeated one.

Multivariate Results

Many of the characteristics of welfare mothers described in the previous two sections are highly interrelated, so that the contrasts in the simple two-way tables may overstate the degree to which each characteristic is associated with the probability of receiving welfare. The following section shows the results of a simple regression analysis, using the same variables presented earlier, as a first cut at untangling these relationships.

Table 4.9 presents OLS results for receiving at least one welfare or AFDC payment any time after the birth of the first child.[6] The model includes a term for year of the first birth, which controls both for period effects due to administrative changes and for effects due to the longer period at risk of those who bore children earlier in the study period.

By and large, the multivariate analysis tells the same story as the bivariate tables. Factors associated significantly with receiving welfare after first birth include being black, being in late adolescence (17 to 18 years old) at the time of the birth, being unmarried at the time of the birth, being a high school dropout, and coming from a family which had received welfare before the baby was born. With the other factors controlled, there is no relationship between welfare and coming from a female-headed household, however. Mother's education is significant only for receiving welfare, not for AFDC.

Women with high educational expectations were less likely to go on AFDC than women with lower expectations, with other factors controlled, in contrast to the complete lack of difference in expectations between AFDC and non-AFDC mothers in Table 4.5. This apparently paradoxical result is consistent with earlier findings based on the NLS that blacks have higher educational expectations than whites if background factors are taken into account (Crowley and Shapiro, 1980; Crowley, 1983). Race and education, as noted, are highly associated with welfare receipt. Further analysis is needed to tell whether

Table 4.9 Regression of Welfare Receipt Following First Birth on Selected Characteristics for Young Mothers

Characteristics	Any welfare	AFDC
Intercept	0.077	-0.007
	(1.16)	(-0.12)
Race:		
Hispanic	0.037	0.017
	(0.80)	(0.42)
Black	0.161	0.109
	(4.03)**	(3.10)**
White	-	-
Age at first birth:		
14-16	0.099	0.113
	(1.73)+	(2.24)*
17-18	0.125	0.093
	(3.43)**	(2.91)**
19 or older	-	-
Year of birth of first child:		
1979	0.177	0.137
	(5.15)**	(4.55)**
1980	0.116	0.061
	(3.77)**	(2.24)*
1981	-	-
With whom did respondent live with at age 14:		
Mother only	-0.003	0.035
	(-0.08)	(1.01)
Others	0.019	0.015
	(0.56)	(0.52)
Both parents	-	-
Marital status at first birth:		
Never married	0.287	0.358
	(8.60)**	(12.23)**
Formerly married	0.221	0.254
	(2.76)**	(3.62)**
Married	-	-
Mother's education:		
0-11	0.061	0.012
	(2.20)*	(0.48)
12	-	-
13-15	0.050	0.030
	(0.80)	(0.55)
16+	-0.011	0.071
	(-0.16)	(1.10)
Education expectation in 1979:		
0-11	0.029	-0.018
	(0.59)	(-0.40)
12	-	-
13-15	-0.055	-0.067
	(-1.51)	(-2.09)*

Table 4.9 (continued)

Characteristics	Any welfare	AFDC
16+	-0.117 (-3.04)**	-0.053 (-1.57)
Received welfare before first birth	0.298 (5.03)**	0.189 (3.62)**
Highest grade completed following first birth:		
0-11	0.161 (4.69)**	0.071 (2.36)*
12	-	-
13-15	0.021 (0.44)	-0.010 (-0.22)
16+	-0.366 (-1.46)	-0.167 (-0.76)
N	1103	1103
Adj. R^2	0.28	0.29
F	22.46	23.14

UNIVERSE: Mothers whose first birth was between 1979 and 1981.

the relationship of educational expectations with AFDC status is spurious or if there is indeed a tendency for mothers with lower educational expectations to be more likely to receive welfare, ceteris paribus.

The analysis in Table 4.10 is restricted to women who had received at welfare or AFDC at least once after bearing their first child. The dependent variable is the proportion of time on welfare between the first birth and December of 1982. The proportion is used instead of the absolute number of months to allow for the variation in the number of possible months, which is of course a function of the timing of the first birth. In addition, as before dummy variables for year of first birth are used to further control for the length of the observation period.

Apparently, once a woman goes on welfare, there is little association between demographic characteristics and the length of time welfare is received. Race, age at first birth, mother's education, and own education go from being highly related to receiving any welfare to being essentially unrelated to the length of time on welfare. The most important factors for duration of welfare are marital status at time of the first birth, and for AFDC only, the year of the first birth. By and large, the signs of the coefficients are the same for proportion of time on welfare as for welfare receipt. Some of the differences in the results can probably be attributed to the smaller sample available for the analysis. However, it is also plausible that the characteristics used in this analysis are more related to the probability of having problems with income than to the duration of those problems.

CONCLUSIONS

Among young women, welfare of all types is highly concentrated among

Table 4.10 Regression of Percent of Time on Welfare or AFDC Following First Birth, for Mothers Who Ever Received Welfare or AFDC

Characteristics	Percent of time on welfare after first birth	Percent of time on AFDC after first birth
Intercept	19.944	39.063
	(2.85)**	(3.85)**
Race:		
Hispanic	5.782	10.995
	(1.31)	(1.69)+
Black	5.071	2.564
	(1.47)	(0.54)
White	-	-
Age at first birth:		
14-16	-8.423	-2.671
	(-1.72)+	(-0.41)
17-18	-1.017	-2.391
	(-0.31)	(-0.52)
19 or older	-	-
Year of birth of first child:		
1979	-1.406	-13.621
	(-0.39)	(-2.69)**
1980	-4.231	-14.558
	(-1.28)	(-2.96)**
1981	-	-
With whom did respondent live with at age 14:		
Mother only	2.950	-1.496
	(0.79)	(-0.30)
Others	-1.330	1.927
	(-0.41)	(0.41)
Both parents	-	-
Marital status at first birth:		
Never married	31.205	19.897
	(10.35)**	(4.23)**
Formerly married	32.367	27.723
	(4.01)**	(2.56)*
Married	-	-
Mother's education:		
0-11	3.049	0.833
	(1.10)	(0.22)
12	-	-
13-15	-1.375	-6.677
	(-0.18)	(-0.63)
16+	1.379	-7.127
	(0.15)	(-0.48)
Education expectation in 1979:		
0-11	1.965	-5.439
	(0.43)	(-0.85)
12	-	-

Table 4.10 (continued)

Characteristics	Percent of time on welfare after first birth	Percent of time on AFDC after first birth
13-15	-0.365 (-0.09)	0.797 (0.13)
16+	-8.544 (-2.15)*	3.091 (0.55)
Received welfare before first birth	7.217 (1.57)	3.919 (0.57)
Highest grade completed following first birth:		
0-11	6.184 (1.67)+	4.636 (0.85)
12	-	-
13-15	-10.077 (-1.65)+	-18.247 (-1.48)
16+	-16.105 (-0.78)	-34.275 (-1.56)
N	615	331
Adj. R^2	0.23	0.13
F	10.25	3.38

UNIVERSE: Women who had a first birth between January, 1979 and December, 1981, who reported receiving welfare/AFDC for at least one month following the first birth.

those who have borne a child. Almost half of the young mothers receive welfare at some point. As expected, the population of welfare mothers are likely to be less educated, to come from broken homes, to be from a minority group, and to have several children at an early age, relative to their non-welfare recipient counterparts. However, it is also clear that a number of women who receive welfare do not fit into these low privilege categories. Even among a population expected to have an overrepresentation of long-term recipients, most women are on welfare for a relatively short period. Patterns for welfare in general are not substantially different from patterns for AFDC specifically, despite differences in target groups and despite the fact that the AFDC group is roughly half the size of the inclusive welfare group.

Although characteristics such as age at first birth, race, and education predict welfare receipt fairly well, they are less closely associated with the length of time that a young mother spends on welfare. The large degree of overlap on critical dimensions between welfare and non-welfare mothers points to the need for a greater understanding of the specific circumstances and combinations of circumstances which lead young women to become dependent on various government transfer programs, as well as the processes which lead young women to be able to leave the programs. In particular, the fact that a large proportion of welfare mothers are employed following the birth of their first child suggests that the keys to reducing welfare dependency will be found in the solution to the larger problem of how to increase the low earning power of young women.

Chapter 4

Notes

[1] Contrary to popular perception, AFDC is not the largest federal welfare program. In terms of expenditures, AFDC is much smaller than Medicaid (Danziger, et al., 1981).

[2] A few of the non-mothers may be reporting AFDC from their own families of origin, or may be supporting a child not their own, such as a sibling, niece or nephew.

[3] Actually the estimates of welfare receipt are somewhat understated, since welfare status is not available for women who had their first child before the beginning of the NLS study.

[4] The twelve years of education category includes GED. It is acknowledged that in some cases, the mothers may have completed their high school education following the birth of their child and their first dependency on welfare.

[5] Mother's education was selected for analysis in preference to father's education for two reasons. First, as noted, a large proportion of young mothers were brought up in female-headed households. Second, there is some evidence that mother's education is more critical than father's education in the formation of daughter's aspirations.

[6] Technically, OLS is inappropriate for analysis of a dummy variable. However, since roughly half of the sample falls in each category, OLS estimates are generally quite comparable to the results derived from dichotomous techniques, and the results are more generally understood.

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Chapter 5

The Effect of Demographic Factors on Schooling and Entry Wages

by

Evangelos M. Falaris and H. Elizabeth Peters

INTRODUCTION AND BACKGROUND

The rise in the birthrate known as the baby boom generated an interest in exploring the impact of changes in the age structure of the population on various economic and social phenomena. Much of the research has focused on labor market outcomes--both relative wages and the unemployment rate facing a given cohort. The consensus is that the baby boom generation is relatively worse off than the generations preceding and following it. The overcrowding of the school system caused by the large number of school age children and its impact on the cost and quality of the education attained by that generation has also received a lot of attention recently. Several different models have been put forward to explain these phenomena and to make predictions about what might happen as the baby boom generation heads towards retirement and the smaller cohorts which follow enter the labor market.

The most simple models assume that the size of an individual's birth cohort is an absolute constraint. When the birth rate increases, the supply of labor entering the market 18 to 20 years later increases proportionately. If workers with different amounts of experience or age are not perfectly substitutable for each other in production, this increase in the supply of entering workers will lower their equilibrium wage. These simple models imply that there is no way to avoid the consequences of being born into a large cohort.

Empirical evidence reported by Freeman (1979), Welch (1979), and Berger

(1983) shows that when the size of a cohort is large, the relative earnings or income of that cohort falls. Their evidence is mixed on whether the impact on initial earnings persists over time and whether women's wages are affected by cohort size in the same way that men's wages are affected. These authors use the number of workers with a given education and age (or experience) as a proxy for the size of the relevant birth cohort, and they assume that this measure is exogenous. More complex models consider the incentives to avoid or mitigate the consequences of being born into a particular cohort through changes in behavior such as educational attainment, timing of entry into the labor market, labor force participation, and the timing of marriage and fertility, especially for women. If the size of one's birth cohort alters these behaviors, wages and earnings will be indirectly influenced in ways that are different from the direct cohort size effects. One necessary assumption in these kinds of models is that individuals are forward-looking: they are presumed to know not only how many others are in their own birth cohort and in past cohorts but also in future birth cohorts. If wages are a function of the number of people with given characteristics in the labor market, individuals can predict what lifetime wages would be conditional on the timing of entry into the labor market and on other decisions which may differentiate them from the average. Behavior is then adjusted to maximize the net present value of earnings.

In this paper we focus on how being in a particular size cohort affects individual educational choices. Education may affect wages through two primary channels: (1) through the timing of entry into the market; (2) through the acquisition of particular skills which increase general productivity and may decrease the amount of substitutability between workers.

The timing idea has been most recently explicated by Wachter and Wascher

(1984). They hypothesize that the timing of entry into the labor market determines the entire future wage path because there is no substitution across experience groups. An individual in a large birth cohort relative to future birth cohorts will have an incentive to delay entry into the labor market to a time when the number of potential entrants will be smaller. One way to delay entry is to stay in school longer. Conversely, if birth rates are rising so that future birth cohorts are more numerous than one's own, one has an incentive to speed up entry into the labor market to avoid the potential competition of the large number of future entrants. One way to speed up entry is to finish school more quickly. Wachter and Wascher note that many students work part time at jobs unrelated to their eventual first full-time job. Thus they can change the speed at which they finish school by adjusting the mix of school and work. To test their hypothesis, Wachter and Wascher examine school enrollment rates over time. They interpret higher enrollment rates as more intensive schooling, i.e., finishing schooling more quickly. They find that larger future cohorts are associated with higher levels of enrollment and higher past cohorts are associated with lower levels of enrollment. The authors do not explore the interactions between time spent in school and level of schooling completed. Their model asserts that the size of one's own birth cohort relative to surrounding birth cohorts merely affects the speed of attaining a given level of schooling, but the level itself is determined by other factors.

Gottschalk and Dooley (1984) focus on the level of human capital accumulation on the job. Unlike most other work in this area, they assume that there are no vintage effects, i.e., workers of all ages and all levels of education are perfectly substitutable for one another. Depressed wages due to a large entering cohort will make on-the-job training (which occurs early in the career) less expensive. Smaller future cohorts will increase future wages and will therefore increase the expected rate of return on investment in training that occurred earlier. The authors predict that the smaller the size of future birth cohorts relative to one's own birth cohort, the greater the incentive to invest in on-the-job training. This same model which focuses on the effect of cohort size on the opportunity cost and rate of return to investment in on-the-job training could also be applied to decisions about education.

Another plausible theory about the interaction between cohort size and the level of education relates to the idea of monopolistic competition which is developed in the industrial organization literature. One way to maintain a positive profit (at least in the short run) is to differentiate your product from that of other producers. This same idea can hold for an individual selling his labor in the market. For example, one possible option for an individual faced with the wage depressing effect of being born into a large cohort is to differentiate himself from others by obtaining more schooling. This strategy would be effective if we assume that the elasticity of substitution is smaller between workers with more education. The specific job match can be very important for highly educated workers, and their wages will not be bid down as much by the competition of others.

One difficulty in isolating empirically these various channels through which birth cohort size can affect education derives from the fact that it takes time to achieve a higher level of education. If Wachter and Wascher's pure timing story were correct, and if there were no birth cohort size effects on the level of education attained, this process of optimally choosing the rate of acquisition of schooling would lead to a smoothing of the size of the entry cohort over the demographic cycle. We would then expect, under such conditions, to observe a smaller variation in the size of the entry cohort than in the size of the birth cohort over time.

There are, however, good reasons to expect that independent of considerations of the rate of return and labor differentiation, a change in the rate of acquiring schooling would affect the level of schooling attained. It is plausible to argue that the more quickly a given level of schooling is completed, the more expensive it is to attain that level. This result would follow from the declining marginal productivity of learning argument espoused by Ben Porath (1967) and Becker (1975). Also, if schooling were partially financed through working part-time, more intensive schooling requires greater foregone earnings during the period, a cost which would more than offset the gain from starting full-time work sooner. Conversely, if a particular birth cohort size leads to an increase in the optimal level of education, individuals with lesser ability would be obtaining more schooling, and the average rate of acquisition of that schooling would decline. Thus the net relationship between the rate of acquisition of schooling and level of schooling obtained is unclear.

If birth cohort size affects the level of education as well as the timing of school completion and entry into the labor market, the story of cohort smoothing over the demographic cycle becomes more complicated. What matters then is not only how many people enter the labor market at the same time, but also how many enter with given characteristics such as educational level. Entry cohort is therefore endogenous in two respects. Individuals can make decisions about when to enter and about the characteristics with which to enter.

In the following sections we present empirical evidence which attempts to disentangle some of these interacting behaviors. In section 2 we define the sample and the variables to be used. In section 3 we estimate partial net effects of cohort size on educational attainment and timing. In section 4, using these parameter estimates, we predict the sizes of entry cohorts over the demographic cycle given actual birth cohort sizes and, separately, under the counterfactual assumption that birth cohort sizes are constant over time. We also predict the level and distribution of educational attainment under the same two assumptions about birth cohort size. In section 5 we present estimates of the effect of birth cohort size on entry wages, distinguishing the direct effect from the indirect effect due to induced changes in education. Section 6 summarizes the results.

DATA

We estimate the education, age at completion, and entry wage equations using data from the young men's, young women's, and youth surveys of the National Longitudinal Surveys of Labor Market Experience. The young men's and young women's surveys consist of observations on individuals born from 1941-1952 and from 1942-1953, respectively. The youth survey consists of observations on individuals born from 1957 to 1964. To estimate the education and age at completion equations we limit the sample to those born during 1960 or before because too many of those born after 1960 are still in school and there is a severe right censoring problem for that group. For the entry wage equations we use data on people born between 1947-1952 and 1959-1960 (men) and 1948-1953 and 1959-1960 (women). These are the cohorts for which entry wages are observed in the data for nearly all of the individuals in those cohorts.

Combining data drawn from the youth survey with data drawn from the two older cohorts allows us to use information on people born in various phases of the demographic cycle. We measure the effect of demographic factors on schooling attainment and its timing by two variables which we call past and future cohort size. These are, respectively, the simple annual averages of the ratios of the number of people born in the same year as an individual to the number of people born in each of the five years before and five years after this individual.[1] So the range of birth cohort information which enters our model encompasses the years 1936-1965. As can be seen in chart one, these years include a substantial part of a demographic cycle. The data we use encompass both a wider range of years (and cohort sizes) and extend closer to the present than has been the case in several other studies of the effect of demographic factors on labor market outcomes (e.g., Berger or Welch). Therefore we can estimate the effects of the demographic cycle on individual behavior with greater precision than has been done previously.

These birth cohort size variables can be regarded as exogenous from the viewpoint of the individual. In contrast, the measures of cohort size in the labor market used by Welch (1979), Berger (1983), and Freeman (1979), which are based on work experience, are likely to be choice variables: individuals can to some extent affect the cohort size which applies to them by choosing when they enter the labor market, e.g., through variations in the amount of schooling they get and in its timing. Our results are thus more powerful evidence bearing on the underlying economic model than has been obtained by these previous studies.

SCHOOLING AND AGE AT SCHOOL COMPLETION

We estimate by ordinary least squares separate reduced form equations for completed schooling and for the age at which it was attained. In this way we can study in a clear fashion the effect of demographic factors on both schooling attainment and on its timing. Because age at school completion is highly correlated with the age of entry into the labor market,[2] the age-at-completion equations convey information on the timing of labor force entry.

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[1] We use averages because relative cohort sizes are highly correlated in adjacent years and this correlation resulted in imprecise estimates of the effect of cohort size.

Table 5.1 contains OLS estimates of the completed education and age at completion equations for men. Means, standard deviations, and definitions of the main variables appear in the appendix.

We measure education and age at completion up to age 25 for the young men and up to 1982 for the youth. It is not yet feasible to use information extending closer to the present for the latter group.[3] The oldest of the youth were 25 years of age in 1982 and we restricted the data from the young men's survey to the same limit for reasons of symmetry. The number of people who were still enrolled in school at age 25 or age in 1982 is quite small for the young men and relatively small for the youth,[4] so our results are unlikely to be subject to severe right censoring bias.[5] In order to reduce this bias we assumed that individuals in our sample who were drawn from the youth survey and were enrolled in school in 1982 (excepting those enrolled in college on a part-time basis) would complete that year of school during their next year of

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[2] The correlation between age at completion of schooling and the age at which we observe the first wage after leaving school full-time is 0.73 for men and 0.73 for women.

[3] 1983 information will be available in the near future so we will be able to relax this constraint.

[4] 9.4 percent of all the men in our sample were enrolled at age 25 or age in 1982 (5.2 percent of the Young Men and 14.9 percent of Youth).

[5] Right censoring bias arises from the inability to observe the ultimate schooling attainment of those still enrolled at the end of the observation period who may have the highest schooling attainment in the sample.

Table 5.1 OLS Estimates of Education and Wage Equations for Men

Dependent variable:	Education[a]	Age[b]
Constant (t statistic)	10.873* (10.881)	19.522* (16.196)
Trend 47-52	1.137* (7.501)	1.891* (10.367)
Trend 57-60	1.580* (4.644)	1.476* (3.608)
White	0.091 (0.934)	-0.239* (-2.010)
Number of siblings	-0.157* (-9.801)	-0.075* (-3.841)
Father's education	0.178* (14.064)	0.170* (11.080)
Mother's education	0.187* (12.237)	0.149 (8.021)
Family structure at 14	0.472* (3.966)	0.364* (2.512)
Residence at 14	0.389* (4.474)	0.564* (5.360)
Past cohort size	5.972* (5.598)	6.204* (4.777)
Future cohort size	-9.636* (-5.894)	-11.104* (-5.653)
R^2	0.321	0.235
F	180.467	109.943
D.F.	(10, 3821)	(10, 3579)
N	3832	3590

[a] Completed education by age 25 or 1982.

[b] Age at completion of schooling.

*Denotes significance at the 5 percent level.

age. This procedure is likely to reduce any right censoring bias because all of the individuals in question were age 21-25 during 1982.

The education and age (conditional on age 25 or age in 1982) regressions in Table 5.1 are in reduced form. The (common) regressors include a set of two binary trend variables which take the value 1 if the year of birth of the individual falls in the indicated interval of years and 0 otherwise, race, number of siblings, parents' education, two background measures, and the two variables measuring average relative cohort size (past and future). All cohort size varibles are significant. In the education regression the negative future cohort coefficient indicates that when individuals' own birth cohorts become larger relative to the future birth cohorts and with other things being held constant, individuals acquire less schooling.

The positive sign of the past cohort coefficient indicates that the larger one's own birth cohort is relative to past cohorts (older than oneself), with other things being equal, the more schooling one acquires. As discussed in section 1, both variables reflect the net influence of several effects: differentiation, timing, and rate of return. The significance of the cohort size variables in the education equation is evidence against the approach of Freeman (1979), Welch (1979), and Berger (1983), who treat education as exogenous, i.e., unaffected by individuals' choices in response to demographic factors.

We find that cohort size variables affect age-at-completion of schooling in the same way that they affect educational attainment. This is consistent with the education results because it takes time to complete more schooling, therefore schooling and age should be positively related.

The coefficient estimates of future cohort size in the education and age regressions are within one standard error of each other. The same is true of the coefficient estimates of past cohort size variables. These results indicate that with our sample of men there is no strong effect of demographic factors on the speed of attaining a given level of schooling, contrary to the hypothesis of Wachter and Wascher (1984). The empirical evidence presented in their study does not provide a clear test of the hypothesis that people time schooling in an attempt to smooth out the effects of the demographic cycle since they do not distinguish between schooling completed and age at completion but only examine age-specific school enrollment. The evidence we present here suggests that Wachter and Wascher's empirical evidence does not support their timing hypothesis but that they have, in fact, identified a schooling completion effect.

The equations in Table 5.1 include as regressors a vector of cohort-specific (trend)[6] and background variables as control variables. We include these regressors in order to isolate the net effects of cohort size variables. The background control variables include number of siblings of the individual and parents' education. The number of siblings is likely to be correlated with the demographic cycle, so unless we control for it, our measures of cohort size may capture the effect of siblings on education and age. We obtain a negative coefficient estimate for siblings and positive coefficient estimates for parents' education. Leibowitz (1974) has obtained the same results in schooling regressions.

Our specification of trend (cohort-specific variables) was arrived at on the basis of appropriate F-tests. Birth years prior to 1947 are our omitted category. We include these cohort-specific binary variables in order to control for potential effects of the military draft on school completion and its timing, business cycle effects, and any other cohort-specific effects other than cohort size. Our specification of the trend variables permits these effects to have different coefficients in different cohorts. Our first trend variable is specific to the individuals belonging to cohorts who were subject to the draft during the Vietnam war. The trend variables are included in order to isolate the pure effect of the demographic cycle on schooling and age, but we do not attempt to interpret the trend coefficient estimates.

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[6] We did not include own birth cohort size as a regressor along with the trend variables and the future and past cohort size variables because own cohort size is highly correlated with the trend variables (up to 1957) and thus resulted in highly imprecise parameter estimates.

In Table 5.2 we report estimates of education and age regressions for women. The subsample drawn from the youth survey was restricted to the women born in 1957-1960 and the data were edited comparably with the data for men.[7] These regressions have a somewhat different specification of the trend binary variables than the regressions for men. This specification was arrived at on the basis of F-tests. The notable results are the negative coefficients for future cohort size and positive coefficients for past cohort size in both education and age regressions. We obtain the same pattern of results for women as we obtained for men. Once again, the estimates of the coefficients of future (past) cohort size are within one standard error of each other in the education and age equations. The cohort size effects for women are smaller than the corresponding effects for men. A possible reason for this is that women may, in part, respond to the effects of the demographic cycle by changing their lifetime labor force participation and its timing independently of variations in schooling attainment and its timing. We have not examined

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[7] 5.5 percent of the women in the sample were enrolled in school at 25/1982 (2.2 percent of the Young Women and 10.8 percent for the Youth) which suggests that right censoring bias is unlikely to be important.

Table 5.2 OLS Estimates of Education and Age Equations for Women

Dependent variable:	Education[a]	Age[b]
Constant (t statistic)	7.268* (9.400)	16.305* (16.873)
Trend 44-48	0.256 (1.680)	-0.801* (-4.270)
Trend 49-53	0.728* (3.912)	0.070 (0.303)
Trend 57-60	1.146* (4.023)	-0.174 (-0.491)
White	-0.452* (-6.029)	-0.975* (-10.228)
Number of siblings	-0.098* (-7.719)	-0.052* (-3.277)
Father's education	0.152* (15.216)	0.151* (11.856)
Mother's education	0.189* (15.164)	0.156* (9.862)
Family structure at 14	0.753* (8.022)	0.661* (5.603)
Residence at 14	0.052 (0.756)	-0.018 (-0.207)
Past cohort size	3.994* (3.955)	3.194* (2.519)
Future cohort size	-3.233* (-2.993)	-2.886* (-2.126)
R^2	0.254	0.149
F	162.360	78.310
D.F.	(11, 5247)	(11, 4929)
N	5259	4941

[a] Education completed by age 25 or 1982.

[b] Age at completion of schooling.

*Denotes significance at the 5 percent level.

the effects of cohort size on the labor force participation of women. This is a subject for future research.

PREDICTIONS

Because we find that birth cohort size affects the level of schooling completed, a simple smoothing story like that of Wachter and Wascher is not sufficient to explain the data. In order to identify any timing-of-entry phenomenon we need to estimate not only the influence of birth cohort size on a given individual's timing of entry, but also determine how that individual's decisions interact with decisions made by the entire population to produce a joint distribution of educational attainment and timing of entry over the demographic cycle.

We use the estimated parameters of the education and age equations to obtain predictions of this joint distribution. These predictions are based on both actual cohort size data and on counterfactual data (assuming identical cohort sizes over time), and they illustrate our results in a clearer fashion than the partial regression coefficients.

A simple example is helpful in showing the differences in behavior of people who are born in different phases of the demographic cycle. Consider men born in 1946 and those born in 1964.[8] The former group belong to a cohort in the upswing of the demographic cycle while the latter belong to a cohort in the downswing of the cycle (Chart 1). Looking at a ten year interval, we see that the 1946 birth cohort is preceded by smaller birth cohorts and succeeded

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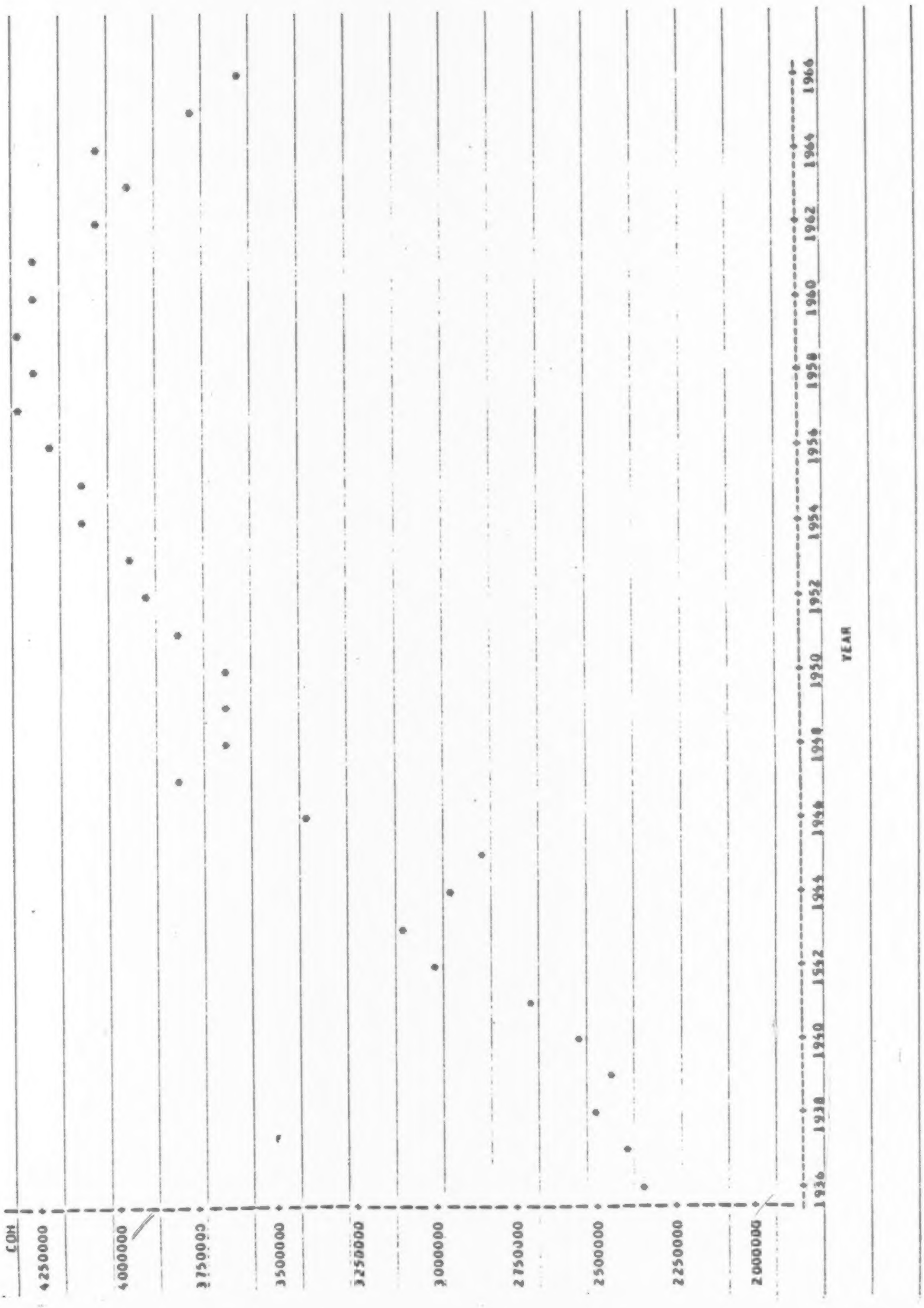
[8] We have data on people born in 1961-1964 in the Youth survey and we use them in our predictions.

CHART 1: Size of Birth Cohort: 1936-1966



by larger ones, whereas the opposite is true of the 1964 birth cohort.[9] We compare the effect of cohort size on the education attained by each group using their actual cohort size variables and, alternatively, under the assumption of identical birth cohorts over time (past cohort size = future cohort size = 1). If birth cohorts were identical over time the effect of cohort size on education of men born in 1946 and of men born in 1964 would be -3.664 (calculated from the estimates in Table 5.1). With the actual cohort sizes the effects are -1.802 for men born in 1946 and -5.029 for men born in 1964. From this comparison we predict an increase in the education of the individuals on the upswing of the demographic cycle and a decrease in the education of the individuals on the downswing of the demographic cycle. Under a flat cohort profile the effects of cohort size on age at completion are predicted to be -4.9. Using the actual cohort sizes, the cohort size effect for men born in 1946 is predicted to be -2.940 and -6.450 for men born in 1964.

In summary, people on the upswing of the demographic cycle complete more education and leave school later relative to a flat cohort profile. People on the downswing of the demographic cycle complete less schooling and leave school earlier relative to a flat cohort profile. As we noted earlier, the age at completion of schooling and the age at which we observe the entry wage are highly positively correlated for men, so the above results also apply to the age of entry into the labor force.

Table 5.3 contains predicted mean schooling attainment and year of completion of schooling. The individuals in the cohorts in the first column

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[9]	Past cohort size	Future cohort size
1946	1.171	0.919
1964	0.965	1.120

Table 5.3 Predicted Mean Schooling Attainment and Year of Completion of Schooling

	Men		
	Years of birth 1941-52	Years of birth 1957-64	All men
Schooling 1[a]	13.363	12.237	12.592
Schooling 2[b]	12.002	13.032	12.707

	Women		
	Years of birth 1942-53	Years of birth 1957-64	All women
Schooling 1[a]	13.912	13.596	13.726
Schooling 2[b]	13.262	13.821	13.591

	Men		
	Years of birth 1941-52	Years of birth 1957-64	All men
Year of completion 1[a]	67.678	79.467	75.743
Year of completion 2[b]	66.176	80.390	75.900

	Women		
	Years of birth 1942-53	Years of birth 1957-64	All women
Year of completion 1[a]	67.486	79.173	74.358
Year of completion 2[b]	66.940	79.356	74.240

[a] Predicted mean based on actual cohort size variables.

[b] Predicted mean assuming a flat cohort profile.

face an increasing cohort profile while the individuals in the cohorts in the second column face a decreasing cohort profile. We predict that the former will complete more schooling and enter the labor market later than would be the case if the cohort profile were flat. We also predict that people facing a decreasing cohort profile will complete less schooling and enter the labor market earlier than if the cohort profile were flat. These results are obtained for both men and for women. The response of women to the actual demographic cycle (relative to a flat cohort profile) is smaller than the response of men. We also note that the predicted means for the entire set of birth cohorts for men and for women obtained using the actual cohort profile do not differ very much from the predicted means obtained assuming a flat cohort profile (third column).

In Charts 5.2, 5.3, and 5.4 we show predicted frequencies of year of school completion for men. We report two sets of predicted frequencies, one assuming a flat cohort profile (dotted line) and one using actual cohort profile (solid line). Chart 5.2 contains predicted frequencies for all men, and Charts 5.3 and 5.4 contain predicted frequencies for men who completed high school and some college, respectively.

In Chart 5.2 we note a shift to the right of the entire portion of the frequency distribution based on a flat cohort profile prior to 1974. The opposite shift is observed for the years after 1974. The latter part of the distribution refers mostly to individuals from the youth cohort (downswing of the demographic cycle) while the former part of the distribution refers mostly to older individuals in the sample (upswing of the demographic cycle). The distribution based on the actual cohort profile is compressed relative to the distribution based on a flat cohort profile. Charts 5.3 and 5.4 control for education so all the people shown are competing with each other in the same

Chart 5.2: Predicted Frequency Distribution of Year of Completion of Schooling for Men

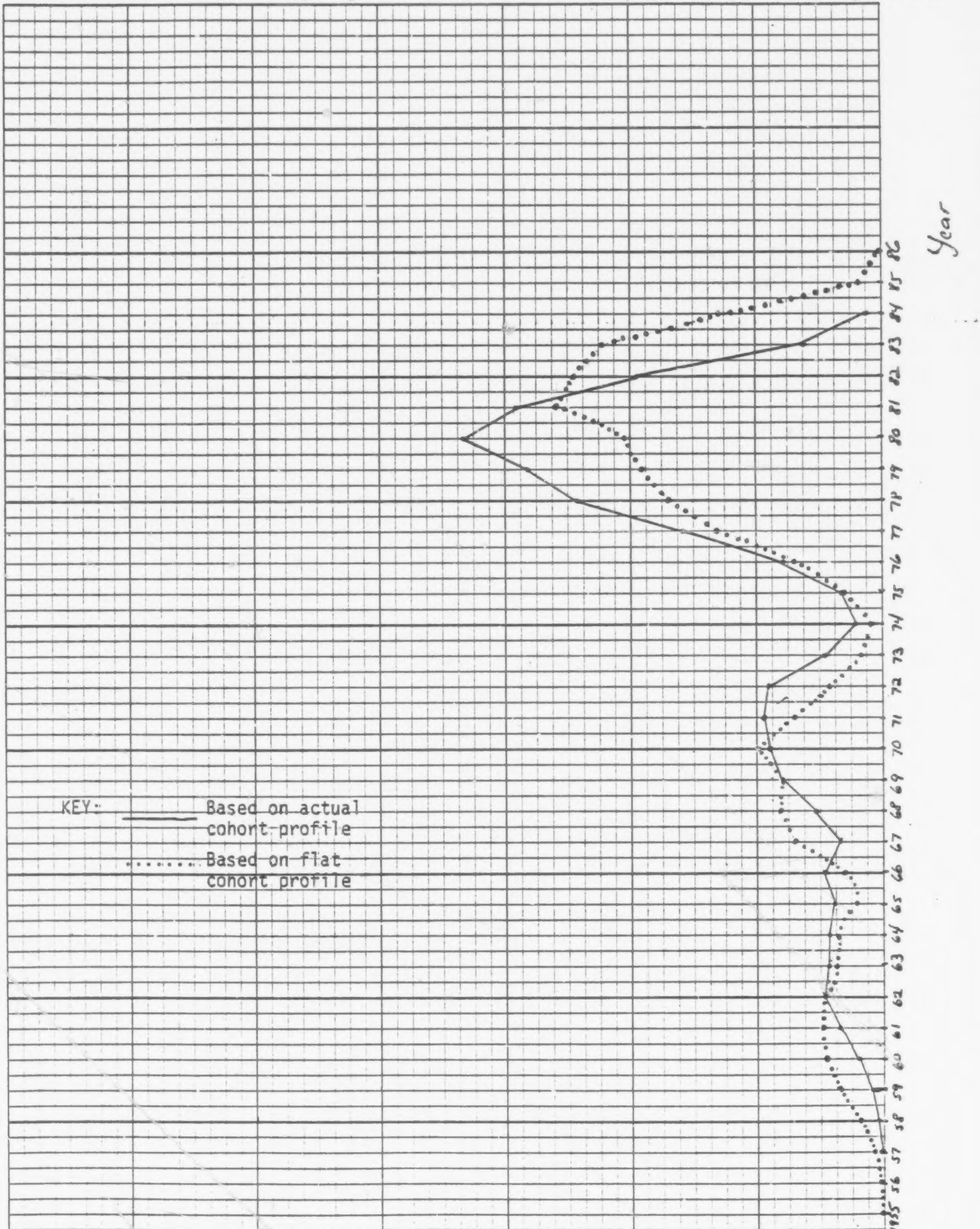


Chart 5.3 Predicted Frequency Distribution of Years of Completion of Schooling for Men Who are High School Graduates

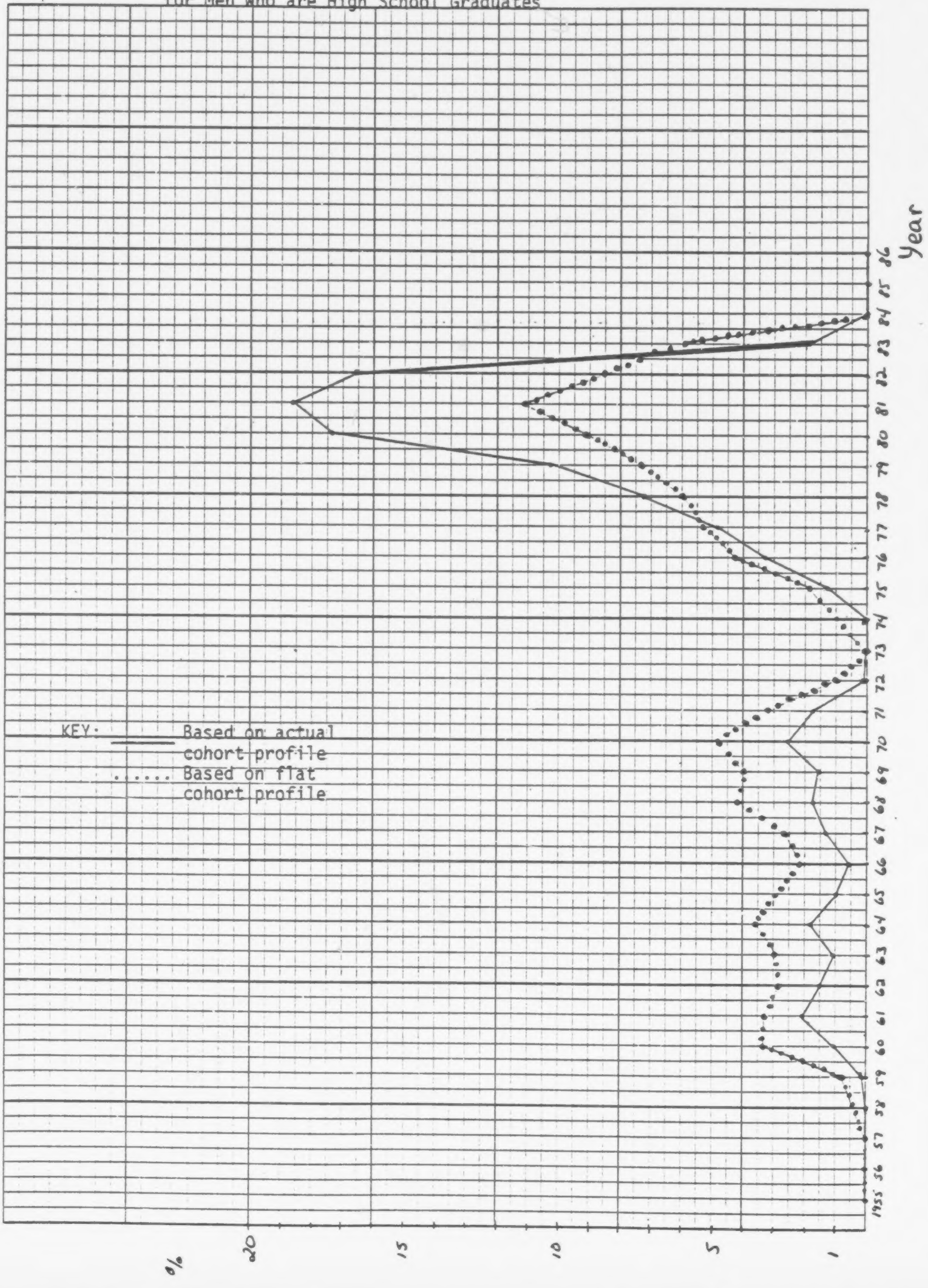
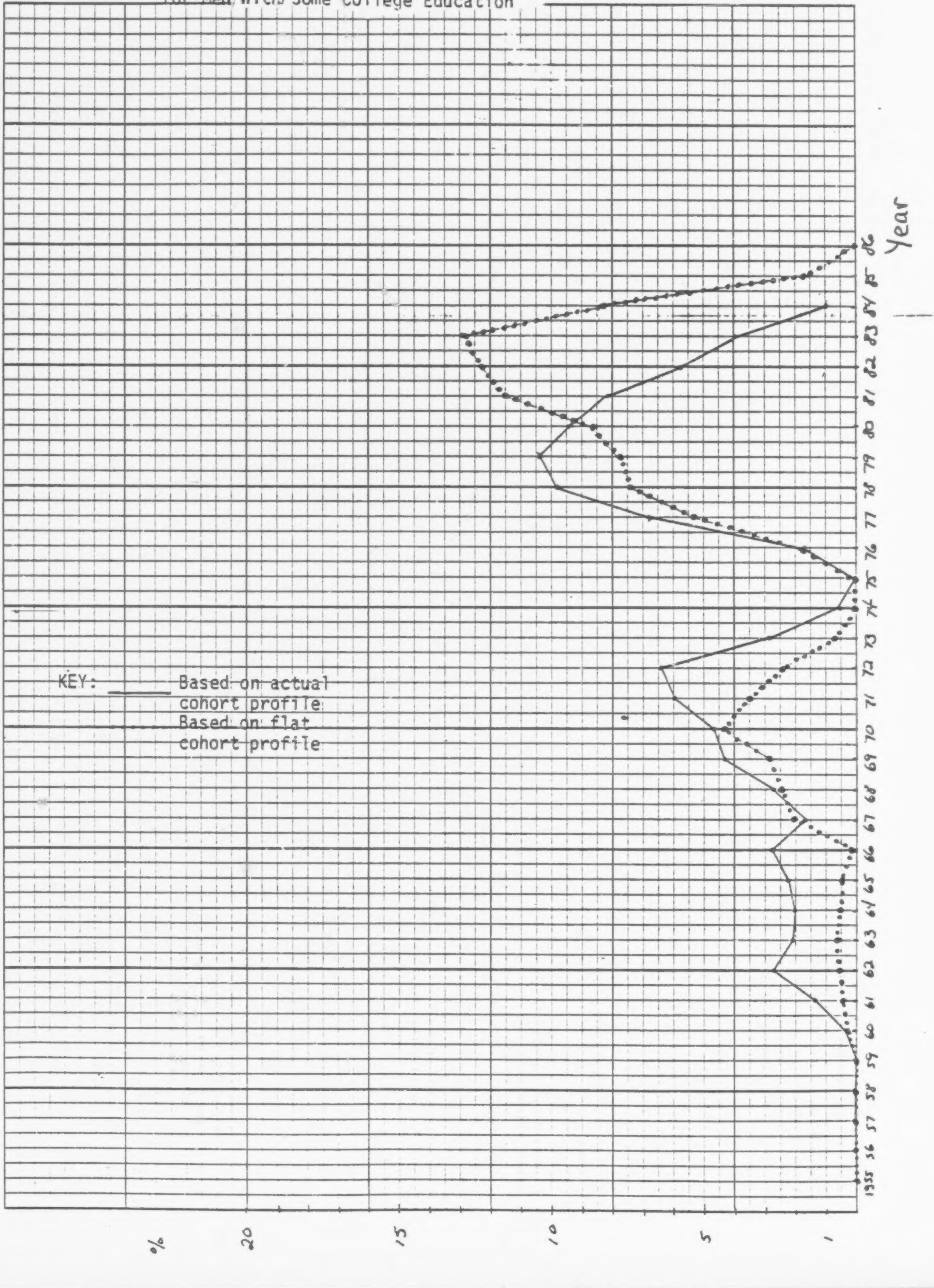


Chart 5.4: Predicted Frequency Distributions of Year of Completion of Schooling for Men with Some College Education



education group for a given year of entry. For high school graduates we predict a lower proportion entering up to the mid-1970s than would have entered with a flat cohort profile and a higher proportion entering after the mid-1970s than would have entered with a flat cohort profile. In the former interval the entrants into the labor market face a rising cohort profile while in the latter period they face a falling cohort profile. Chart 5.4 shows the frequency of men who have completed some college entering in each year. The chart is approximately a mirror image of Chart 5.3.

ENTRY WAGES

An important effect of the demographic cycle on individual economic well-being manifests itself through wages. The estimation of wage equations can also provide us with evidence on the presence of smoothing behavior by individuals. We examine the effect of cohort size on entry wages. We do not consider the effect of cohort size on the growth rate of wages because of the brevity of the time interval of the youth survey. We define entry wage as the first wage of an individual after leaving full-time schooling. There are two types of censoring bias which may arise when we attempt to find the entry wage by looking at longitudinal data such as those used here: (1) the entry wages of the people who left school before the survey began are not observed, and (2) the entry wages of the people who are still in school in the latest year of the survey are also not observed. If the former have the least schooling attainment and the lowest entry wages while the latter have the highest schooling attainment and the highest entry wages, each type of censoring would lead to a distinct bias in the estimates of an entry wage equation. In addition, the two types of bias are related to cohort size because the first is more prevalent among the oldest individuals in the sample where birth cohort size is large and the second bias is more prevalent among the youngest individuals in the sample where birth cohort size is falling.

We have attempted to reduce the extent of censoring bias by selecting the individuals from the young men's and young women's surveys who were age 14-18 during the first survey. These individuals were most likely to be in school when the survey began and to leave school subsequently and begin work sometime during the next years covered by the survey period. We also chose the individuals who were born in the middle of the birth years included in the youth survey. These individuals are less likely to have either left school before 1979 (the beginning of the youth survey) or be still enrolled in school in 1982 (the latest year for which we have data) than are the older or younger people in the youth survey.

We estimate structural entry (real) wage equations for men and for women in order to isolate the direct and indirect (through educational attainment) effects of cohort size on wages. We estimate wage equations with a binary cohort-specific trend variable, race, a measure of cohort size, and cohort size in interaction with predicted completed education. We do not include education by itself as a regressor because it was highly collinear with the interaction variable of education with cohort size and this collinearity resulted in highly imprecise parameter estimates. We treat education as an endogenous variable and replace actual education with predicted education in order to avoid simultaneous equation bias. Predicted education is obtained using the parameters of the education equations in Tables 5.1 and 5.2 for men and for women, respectively. The identifying restriction is that background variables and parents' education affect education attained but do not directly affect the entry wage. Leibowitz (1974) has estimated a similar system, but she assumes that the error terms of the education and wage equations are uncorrelated. We do not make this assumption.

We specify the cohort size variable differently in the wage equations than in the education and age equations. In the former, cohort size is the number of people belonging to the same birth cohort as the individual. We assume that education and age at completion can be chosen by individuals in response to relative past and future cohort sizes but that entry wages are directly affected only by one's own cohort size. The effects of relative cohort sizes on wages are indirect and operate through education. We examine entry wages as an outcome of direct and indirect effects of cohort size.

Estimates of the entry wage equations for men and women are reported in Table 5.4. The main results with respect to the cohort size variable by itself and in interaction with predicted education is that a larger cohort size leads to reduced entry wages, but individuals acquire more education in response to increased cohort size which tends to moderate the negative direct effect of cohort size on entry wages. The effect of one's own cohort size is not significant for men, but the signs of own and interaction cohort size variables are similar for men and women. Our finding that there is a significant cohort size effect on the entry wages of women is in contrast with Freeman's (1979) finding of no significant cohort size effect on women's wages.

We note that on the basis of the education and age cohort size coefficient estimates, men show a greater response to the demographic cycle than women. To the extent that this behavioral response offsets the adverse effect of the demographic cycle on entry wages, it is not surprising that we estimate a smaller direct effect of one's own cohort size on entry wages for men than for women.

Table 5.4 OLS Estimates of the Entry Wage Equations

	Men	Women
Dependent variable:	Natural logarithm of entry wage[a]	
Constant (t statistic)	0.063 (0.075)	2.057* (4.473)
Trend 47-52	0.228* (2.014)	-
Trend 44-48	-	-0.040 (-0.471)
Trend 49-53	-	-0.110 (-1.920)
White	-0.020 (-0.435)	0.022 (0.736)
Predicted Education · Cohort Size	0.000000002* (6.654)	0.0000000015* (5.807)
Cohort size	-0.000000014 (-0.715)	-0.00000006* (-5.376)
R^2	0.101	0.056
F	26.54	15.44
D.F.	(4, 946)	(5, 1305)
N	951	1311

[a] First real hourly wage observed after leaving school full-time.

[b] Denotes significance at the 5 percent level.

CONCLUSION

We have found evidence that both men and women change their schooling attainment and their age at completion in response to the demographic cycle. The variations in schooling attainment tend to moderate the adverse effects of cohort size on entry wages. We have also found evidence of forward-looking behavior of individuals. Our estimates have a clearer interpretation than those in previous studies.

An important extension of this research will deal with the effect of cohort size on labor force participation and fertility of women. For instance, unfavorable labor market conditions arising from the demographic cycle may induce some women to time childbearing and labor force participation in an attempt to smooth out the effects of the demographic cycle. These issues will be the subject of future research.

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Chapter 5

Appendix

Variable Definitions

Education: number of grades completed by age 25 (data from Young Men's and Young Women's surveys) or by 1982 (data from Youth survey). Individuals from the Youth survey who were enrolled in school in 1982 (part-time college enrollment excepted) are assumed to complete the grade they are attending.

Age at completion: age at which highest grade completed (as defined above) is attained. For the individuals from the Youth survey who were enrolled in 1982 (part-time college enrollment excepted) age at completion is age in the 1982 interview increased by one.

Entry wage: first real hourly wage observed after the individual leaves full-time school. Individuals whose entry wage is invalidly missing (e.g., owing to refusal to answer the relevant question) are excluded. Individuals for whom we observe an entry wage who subsequently return to school are also excluded.

Number of siblings: measured at the beginning of the survey period.

Father's education: in single years.

Mother's education: in single years.

White: binary variable 1 if white, 0 otherwise.

Family structure at 14: 1 if the respondent lived with both parents at age 14, 0 otherwise.

Residence at 14: 1 if respondent lived in an urban area at age 14, 0 otherwise.

Past cohort size: the simple average of the ratios of the birth cohort of the respondent to the birth cohorts 1-5 years older than the respondent.

Future cohort size: the simple average of the ratios of the birth cohort of the respondent to the birth cohorts 1-5 years younger than the respondent.

Cohort size: number of individuals born in the same year as the respondent.

All men who ever served in the military are excluded. All individuals missing one or more interviews up to age 25 are excluded.

Chapter 5

Appendix Table Means and Standard Deviations of Selected Characteristics of the Samples

	Men		Women	
Variable	Mean	Standard deviation	Mean	Standard deviation
Age	20.331[a]	3.014	19.548[c]	2.744
Education	13.121	2.730	12.795	2.400
White	0.794	0.404	0.772	0.420
Number of siblings	3.366	2.511	3.582	2.575
Father's education	10.542	4.053	10.453	3.985
Mother's education	10.829	3.295	10.770	3.135
Family structure at 14	0.885	0.319	0.882	0.323
Residence at 14	0.744	0.436	0.755	0.430
Past cohort size	1.074	0.067	1.075	0.067
Future cohort size	0.980	0.068	0.975	0.069
Natural logarithm of entry wage	0.671[b]	0.516	0.421[d]	0.417
Sample size	3831		5258	

[a] Sample size: 3589.

[b] Sample size: 951.

[c] Sample size: 4940.

[d] Sample size: 1311.

The Center has also been active in manpower planning both in the U.S. and in the developing countries. A project for the Ohio Advisory Council for Vocational Education identified the highly fragmented institutions and agencies which supply vocational and technical training in Ohio. Subsequent projects for the Ohio Occupational Information Coordinating Committee have followed graduates of these programs. These data and information on occupational distributions of employers collected for the Occupational Employment Statistics Program are being integrated into a comprehensive planning model which will be accessible to trainees and employers and linked to a national network.

Another focus of the Center's research is industrial relations and collective bargaining. In a project for the U.S. Department of Labor, staff members are working with unions and management in a variety of industries to evaluate several current experiments for expedited grievance procedures. The procedural adequacies, safeguards for due process, and cost and timing of the new procedure are being weighed against traditional arbitration techniques.

Senior staff also serve as consultants to many boards and commissions at the national and state level. Recently the Center's staff have produced papers and prepared testimony for the Department of Labor, the Vice President's Task Force on Youth Unemployment, the Joint Economic Committee of Congress, the National Commission for Employment and Unemployment Statistics, the National Commission for Employment Policy, the White House Conference on the Family, the Ohio Department of Corrections, the Ohio Board of Regents, the Ohio Governor's Task Force on Health, and the Ohio Governor's Task Force on Welfare.

The Center maintains a working library of approximately 10,000 titles, including a wide range of reference works and current periodicals, as well as an extensive microfilm and microfiche collection. Through their facilities linked to the University computer, the Center's data processing staff provide statistical, technical, and programming support both for in-house researchers and the over 250 users of the National Longitudinal Surveys data tapes. They maintain the NLS tapes, data base, documentation, and associated software.

For information on specific Center activities, write: Director, Center for Human Resource Research, 5701 North High Street, Worthington, Ohio 43085.

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5701 North High Street
Worthington, Ohio 43085

Center for Human Resource Research

The Center for Human Resource Research is a policy-oriented multidisciplinary research organization affiliated with The Ohio State University. Established in 1965, the Center is concerned with a wide range of contemporary problems related to developing and conserving human resources. Its more than thirty senior staff members come from disciplines including economics, education, English, health sciences, industrial relations, management science, psychology, public administration, social work, and sociology. This multidisciplinary team is supported by approximately 70 graduate research associates, full-time research assistants, computer programmers, and other personnel.

The Center has become preeminent in the fields of labor market research and manpower planning. With continuing support from the United States Department of Labor, the Center has been responsible since 1965 for the National Longitudinal Surveys of Labor Market Experience. Staff have assisted in population and human resource planning throughout the world, having conducted major studies in Bolivia, Ecuador, Kenya, Sierra Leone, Venezuela, and Zaire. At the request of the National Science Foundation, a review of the state of the art in human resource planning was conducted. Other studies have assessed the impact of labor and education policy on labor supply and evaluated employment statistics collection methods. Senior personnel are also engaged in several other areas of research—collective bargaining and labor relations, evaluation and monitoring of the operation of government employment and training programs, and the projection of health education and facility needs.

The Center for Human Resource Research has received over two million dollars annually from government agencies and private foundations to support its research in recent years. Providing support have been the U.S. Departments of Labor, State, Defense, Education, Health and Human Services; Ohio's Health and Education Departments and Bureau of Employment Services; the Ohio cities of Columbus and Springfield; the Ohio AFL-CIO; the George Gund Foundation; the Rockefeller Foundation; and the Ford Foundation. The breadth of the Center's research interests is best illustrated by a brief review of a few of its current projects.

The Center's largest project is the National Longitudinal Surveys of Labor Market Experience. This project has involved repeated interviews over a fifteen-year period with four groups of the United States population: older men, middle-aged women, and young men and women. The data are collected for 20,000 individuals by the U.S. Bureau of the Census, and the center is responsible for data analysis. Since 1979, the NLS has followed an additional cohort of 13,000 young men and women between the ages of 14 and 21. This cohort includes for the first time those serving in the armed forces at the time of the initial interview. In addition to being the definitive U.S. national data set on the labor market activities of young adults, this continuing survey includes unique batteries of questions on such socially important issues as delinquency, alcohol and drug use, fertility, and prenatal care. For this cohort, field work is handled by the National Opinion Research Center. To date the Center's staff have prepared dozens of research monographs, special reports, and books on the NLS, and they also prepare and distribute data tapes for public use.

The Quality of Work Life Project, another ongoing study, began in 1975 as an attempt to improve the productivity and the meaningfulness of work for public employees in the cities of Springfield and Columbus. Center staff also served as third party advisers and researchers exploring new techniques for attainment of management-worker cooperation and worker health in a number of central Ohio private sector industries.

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